



UNIVERSIDAD  
ANA G. MÉNDEZ

**UAGM**  
Recinto de Gurabo

# CATALOG

---

## UNDERGRADUATE Programs

(The effective date of this document  
is extended until July 30, 2021.)  
*- Revised to include addendum. -*



**2019-2020**

**POLICY STATEMENT:**

This catalog contains the major points of the current agreement between the students and the Institution. Within this agreement, the institution reserves the right to make changes in course offerings, curricula, and other policies affecting its programs.

Due to the changing nature of professions, the institution is continuously reviewing and restructuring many of its academic programs in an effort to enhance their quality, improve efficiency, and to comply with requirements of professional boards, accrediting agencies, and governmental laws and regulations, among others. In that process, some of the programs and courses mentioned in this catalogue may be modified, consolidated with other programs and courses, or eliminated. **When the curriculum of any one program is revised, the institution will automatically initiate the transfer process of every student enrolled in said program to the revised curriculum but without increasing the number of credits required for the students to finish the program.**

If you have questions about a particular program of course, you should contact the appropriate university school or department. In case that a program is eliminated, the program director will prepare a course schedule to assure the graduation of those students enrolled in the program.

Revised: July 2019

## CONTENT

Our Profile .....	6
Mission .....	6
Vision .....	6
Institutional Values Statement .....	6
Institutional Objectives .....	7
Accreditation and Affiliations .....	7
Licensures .....	7
Central Administration and Board of Directors .....	7
Board of Directors .....	8
Campus Administration .....	8
Legislative Boards .....	10
Graduate Studies and Research .....	10
Research Institutes .....	11
Puerto Rico Energy Center (PREC) .....	11
Admissions .....	11
General Admission Requirements .....	11
Admission Formula .....	12
Placement Exams: English/Spanish/Mathematics .....	12
Readmission .....	13
Transfer Students .....	13
Course Validation .....	13
Advanced Placement Test .....	13
Pre-College Courses .....	13
Residence .....	13
Transient Students .....	13
International Students .....	13
Academic Year .....	14
Effective Dates .....	14
Tuition and Special Fees .....	14

**CONTENT**

Credit hour definition .....	15
Academic Regulations .....	16
Satisfactory Academic Progress (SAP) Policy .....	16
Registration for courses .....	18
Classification of Students .....	18
Academic Load .....	18
Distance Education .....	18
Census .....	19
Grading System .....	19
Grade Changes .....	19
Grade Appeals .....	19
Incomplete "I" Grade .....	20
Repeating Courses.....	20
Withdrawals .....	20
Changes in the Program of Studies .....	20
Standards for Academic Progress .....	20
Independent Study.....	21
Academic Probation .....	21
Academic Suspensions .....	21
Appeals.....	21
Reinstatement of Financial Aid .....	22
Students Rights and Responsibilities.....	22
Family rights and Privacy Act.....	22
Release of Student Information.....	22
Graduation Requirements.....	23
Graduation with Honors.....	23
Course Validity.....	23
Student Services.....	23
Enrollment Management Services.....	23
Academic and Personal Support Services.....	24
Health Service.....	25
ARMY, Air Force (ROTC).....	25
Services for Disabled Students.....	26
Automobiles on Campus.....	26
Dining Services.....	26
Student Activities.....	26
Student Government.....	26
Student Publications.....	26
Student Organizations.....	26
Universidad Ana G. Méndez-Recinto de Gurabo Choir.....	26
Theater Workshop.....	26
Athletic and Intramural Programs.....	27
Veteran's Services.....	27
Library.....	27
Collections.....	28
Archives.....	28
Informatics and Telecommunications.....	28
Museum and Center for Humanistics Studies Dra. Josefina Camacho De la Nuez.....	28
Evening and Saturday Program.....	29
School of Professional Studies and Continuing Education (AHORA Program).....	29
Continuing Education.....	29
Off-Campus Centers.....	30

<b>School of Liberal Arts and General Education</b> .....	34
Associate Degree in Interdisciplinary Studies .....	36
<b>School of Business and Entrepreneurship</b> .....	45
Associate Degree in Business Administration in Accounting .....	47
Associate Degree in Business Administration In Computerized Information Systems .....	47
Associate Degree in Business Administration in Management.....	48
Associate Degree in Sales and Marketing .....	48
Bachelor’s Degree in Business Administration with concentration in Accounting .....	49
Bachelor’s Degree in Business Administration with concentration in Computerized Information Systems.....	49
Bachelor’s Degree in Business Administration with concentration in Management.....	50
Bachelor’s Degree in Business Administration with concentration in Marketing.....	51
Bachelor’s Degree in Business Administration with concentration in Office Technology Management .....	52
<b>School of Education</b> .....	75
Associate Degree in Personal Training .....	77
Associate Degree in Sports Training .....	78
Associate Degree in Sign Language Interpretation .....	78
Associate Degree in Infants and Toddlers.....	79
Bachelor’s Degree in Elementary Education with concentration in Preschool Education .....	79
Bachelor’s Degree in Elementary Education with concentration in Primary Education (K-3).....	80
Bachelor’s Degree in Elementary Education with concentration in English.....	81
Bachelor’s Degree in Secondary Education with concentration in Biology.....	81
Bachelor’s Degree in Secondary Education with concentration in Chemistry .....	82
Bachelor’s Degree in Secondary Education with concentration in English .....	83
Bachelor’s Degree in Secondary Education with concentration in General Science.....	83
Bachelor’s Degree in Secondary Education with concentration in History .....	84
Bachelor’s Degree in Secondary Education with concentration in Mathematics .....	85
Bachelor’s Degree in Secondary Education with concentration in Vocational Industrial Education .....	85
Bachelor’s Degree in Special Education with concentration in Special Education K-12.....	86
Bachelor’s Degree in Physical Education with concentration in K-12 level.....	87
Bachelor’s degree in Recreation .....	88
<b>Ing. José Domingo Pérez School of Engineering</b> .....	112
Associate Degree in Electronic Engineering Technology .....	114
Associate Degree in Mechanical Engineering Technology .....	115
Associate Degree in Quality Control Engineering Technology.....	116
Associate Degree in Computer Technology & Networks .....	116
Associate Degree in Electrical Technology and Renewable Energy .....	117
Bachelor’s Degree in Science with concentration in Computer Engineering.....	124
Bachelor’s Degree in Science with concentration in Electrical Engineering.....	127
Bachelor’s Degree in Science with concentration in Industrial & Management Engineering.....	131
Bachelor’s Degree in Science with concentration in Mechanical Engineering.....	135
Bachelor’s Degree in Science with concentration in Civil Engineering .....	138
<b>School of Health Sciences</b> .....	162
Associate Degree in Veterinary Technology.....	165
Associate Degree IN Nursing Sciences.....	165
Bachelor’s Degree in Food and Nutrition Management.....	166
Bachelor’s Degree in Nursing Sciences.....	167
Bachelor’s Degree in Nutrition and Dietetics.....	168
Bachelor’s Degree in Speech Language Therapy.....	169
Bachelor’s Degree in Veterinary Technology.....	170
<b>International School of Design and Architecture</b> .....	187
Associate Degree in Fashion Design.....	188
Associate Degree in Web Design.....	189
Associate Degree in Architectural Drafting.....	189
Bachelor’s Degree in Design with concentration in Industrial Design (BDes) .....	190
Bachelor’s Degree in Design with concentration in Graphic Design (BDes) .....	191
Bachelor’s Degree In Design with concentration in Interior Design (BDes) .....	192
Bachelor’s Degree in Science with concentration in Landscape Architecture (BSLA) .....	193
Bachelor’s Degree in Design with concentration in Fashion Design (BDes) .....	194

## Universidad Ana G. Méndez-Recinto de Gurabo

---

<b>School of Natural Sciences and Technology</b> .....	214
Associate Degree in Biopharmaceutical Technology.....	216
Associate Degree in Science in Food Technology and Safety .....	216
Bachelor’s Degree in Science with concentration in General Science.....	217
Bachelor Degree in Science with concentration in Biology.....	218
Bachelor’s Degree in Science with concentration in Chemistry .....	219
Bachelor’s Degree in Science with concentration in Biotechnology .....	220
Bachelor’s Degree in Science with concentration in Medical Technology .....	221
Post-Baccalaureate Certificate in Medical Technology .....	223
Integrated Bachelor/Master in Science in Food Technology and Safety .....	224
<b>School of Social Sciences and Communications</b> .....	250
Associate Degree in Cinematography and Photographic Direction .....	252
Associate Degree in Arts in General Social Sciences .....	253
Associate Degree in Forensic Investigation.....	253
Bachelor’s Degree in Social Sciences General .....	254
Bachelor’s Degree in Social Science with concentration in Psychology .....	254
Bachelor’s Degree in Social Sciences with concentration in Criminology .....	255
Bachelor’s Degree in Arts with concentration in Social Work .....	256
Bachelor’s Degree in Arts in Humanities with concentration in Socio-Humanistic Studies .....	256
Bachelor’s Degree in Communication with concentration in Film Production, Video And Multimedia .....	258
Bachelor’s Degree in Communication in Digital Journalism .....	258
Bachelor’s Degree in Communication with concentration in Public Relations and Advertising .....	260
<b>School of Professional Studies</b> .....	277
Bachelor’s Degree in Public Health with concentration in Health Services Management .....	278
Bachelor’s Degree in Business Administration with concentration in Human Resources Management .....	279
<b>School of Public Safety</b> .....	285
Associate Degree in Emergency Management and Disaster Recovery .....	286
Associate Degree in Public Safety .....	286
Bachelor’s Degree in Penal Justice with concentration in Security Protection .....	287
<b>School of Technical Studies</b> .....	293
Associate Degree in Respiratory Therapy.....	294
Associate Degree in Pharmacy Technician.....	294
Associate Degree in Clinical Therapeutic Massage.....	295
Associate Degree in Office Systems with Medical Billing .....	295
Associate Degree in Preschool Education Teacher Assistant .....	296
<b>Appendix</b> .....	304

# CATALOG 2019-2020

## UNDERGRADUATE PROGRAMS

### OUR PROFILE

Universidad Ana G. Méndez-Recinto de Gurabo is a nonprofit institution of higher education located 15 miles southeast of San Juan, Puerto Rico, within easy reach of the entire east-central part of the island. Its 140-acre suburban campus and its fifteen buildings provide an ideal atmosphere for the learning experience. The university currently operates five (5) Additional Locations located in Barceloneta, Cayey, Yabucoa, Isabela, and Ponce, and five (5) US Branch Campuses three (3) in Florida, one (1) in Maryland and one (1) in Texas. It offers technical and professional certificates, associate, bachelor's, master's and doctoral degrees.

The academic system is organized into nine (9) main schools: School of Engineering, International School of Design and Architecture, Natural Sciences and Technology, Health Sciences, Social Sciences and Communications, Education, Business and Entrepreneurship, Technical Studies, School of Liberal Arts and General Education, and two (2) SUAGM systemic, the School of Professional Studies and Continuing Education and the School of Public Safety.

The General Education Deanship, now School of Liberal Arts and General Education (LASGE), was established to address the particular needs of new students admitted to the University. In addition to offering first-year and second-year courses in the General Education Component (GEC), the LASGE provides an array of support services to students in their first and second year.

Two other divisions that provide educational services to different populations are the School of Technical Studies, which offers post-secondary professional careers and associate degrees in technical fields, and the School of Professional Studies (AHORA), which serves adults who have had previous university experience, are full-time employees, and can benefit from an accelerated adult learner program at the undergraduate or graduate level. The School provides a university environment for the professional adult where the teaching methodologies, as well as the academic and administrative services are tailored to meet the genuine needs of this population.

It is a professionally oriented institution with a variety of offerings, from technical certificates to doctoral degrees. The institution serves a diversified student body mostly from

the surrounding communities, with a variety of economic and educational backgrounds.

Founded in 1972, Universidad Ana G. Méndez-Recinto de Gurabo has continued to grow in the new millennium. The student population of more than 15,000 is composed of young adults and professionals.

The academic staff consists of more than two hundred thirty-six (236) full-time faculty members and three hundred eighty (380) full-time equivalent professors. The full-time faculty members hold doctorates and master's degrees in their fields of expertise. Nearly sixty-four (64) percent of Universidad Ana G. Méndez-Recinto de Gurabo's full-time faculty hold a doctoral degree and thirty-nine (39) percent of part-time faculty holds a doctoral degree. The gender distribution of the faculty is equally divided. Universidad Ana G. Méndez-Recinto de Gurabo is a member of the Universidad Ana G. Méndez-Recinto de Gurabo System.

### MISSION

Universidad Ana G. Méndez-Recinto de Gurabo is an institution of higher education with broad academic offerings of the highest standards of quality. Committed to excellence in teaching, research, innovation, internationalization, and social-humanistic values for a diverse academic population, Universidad Ana G. Méndez-Recinto de Gurabo forms global citizens with critical thinking skills which contribute to the development and well-being of Puerto Rico and other countries.

### VISION

The vision of the Universidad Ana G. Méndez-Recinto de Gurabo is to be the leading educational institution in teaching and research, which promotes innovation, entrepreneurship, internationalization, and sensibility towards cultural diversity and the environment.

### INSTITUTIONAL VALUES STATEMENT

Universidad Ana G. Méndez-Recinto de Gurabo is committed, as an institution of higher education, to:

1. Freedom of thought and expression
2. Excellence in teaching and the pursuit, generation, dissemination and application of knowledge

3. Respect the dignity of the individual
4. Respect nature and the environment
5. Promote ethical, social and cultural values
6. Recognize and respect diversity
7. Promote institutional excellence in planning, operations and service
8. Promote human and esthetic sensibility.

### **INSTITUTIONAL OBJECTIVES**

To fulfill its mission, Universidad Ana G. Méndez-Recinto de Gurabo:

1. Maintains a flexible admissions policy in which each academic school establishes requirements for its programs.
2. Provides services to a diversified student body to help it achieve academic and personal goals.
3. Fosters research to strengthen the teaching and learning processes as well as to improve the quality of life in the surrounding communities.
4. Promotes the internationalization of its academic programs through strategic alliances.
5. Develops and implements a systematic faculty development plan to improve academic credentials, pedagogical competencies and instructional technology skills.
6. Recruits and develops quality human resources.
7. Provides academic skills and career-oriented activities to precollege students, as well as opportunities for continuing education, thus fulfilling the needs of the community.
8. Promotes the use of innovative and nontraditional teaching methodologies.
9. Promotes ethical values that will allow students to exert their professional judgment and performance responsibly.
10. Fosters the preservation and dissemination of those values inherent to Puerto Rican culture in a global context.
11. Establishes collaborative partnerships among universities, government, industry, and community organizations.
12. Contributes to students' awareness of their rights and responsibilities as citizens in a democratic society.

### **ACCREDITATION AND AFFILIATIONS**

#### **Regional Accreditation**

Middle States Commission on Higher Education (MSCHE),  
3624 Market Street, Philadelphia, PA 19104

Telephone: 267-284-5000

#### **Specialized Accreditations**

1. Accreditation Council for Education in Nutrition and Dietetics (ACEND)
2. Accrediting Council on Education in Journalism and Mass Communications (ACEJMC)
3. American Chemical Society (ACS)
4. ABET
5. Association to Advance Collegiate Schools of Business (AACSB)
6. AVMA Committee on Veterinary Technician Education and Activities (CVTEA)
7. Council on Academic Accreditation in Audiology and Speech-Language Pathology - American Speech-Language Hearing Association (CAA-ASHA)
8. Council on Higher Education Accreditation (CHEA)
9. Council on Naturopathic Medical Education (CNME)
10. Council for the Accreditation of Educator Preparation (CAEP) (formerly TEAC)
11. Council on Social Work Education (CSWE)
12. American Psychological Association (APA)
13. National Architectural Accrediting Board (NAAB)

For information about accreditation status, visit <http://ut.suagm.edu/es/academia/acreditaciones>.

### **LICENSURES**

Puerto Rico Council on Education  
PO Box 19900  
San Juan, PR 00910-1900

Pennsylvania Department of Education  
333 Market Street Harrisburg, PA 17126  
Offering: MEd Teaching of English as a Second Language

St. Croix  
Center RR2 Box 9296  
Kingshill #3 Vicorp Property Kingshill  
St. Croix, USVE, 00850  
Offering: MEd Teaching of English as a Second Language

St. Thomas/St. John School District  
1834 Kogens Gade  
St. Thomas, USVI 00802  
Offering: MEd Teaching of English as a Second Language

### **CENTRAL ADMINISTRATION AND BOARD OF DIRECTORS**

The Sistema Universitario Ana G. Méndez, Inc. (SUAGM) is a not for profit private corporation established under the laws of the Commonwealth of Puerto Rico. It is comprised of four (4) academic institutions, one (1) non commercial private TV Station for public broadcasting, and a Central Administration, under which all administrative affairs of the institution are managed by a President/CEO. Universidad Ana G. Méndez-Recinto de Gurabo is one of the four (4) academic institutions.

A thirteen (13) -member board of trustees governs the System. Of these, five (5) are permanent members. The other eight (8) members are elected by the board for two term periods of two (2) years each, and two periods of four(4) years, that add up to a maximum of 12 years of service in the board. The board members are distinguished professionals who represent different career paths and fields of work, and/or civic and community leaders.

The chief executive officer (CEO) of SUAGM is the President, and there is also an Executive Vice President. Each of the administrative and academic components has its own CEO. Thus, the Central Administration units are led by Vice Presidents for: Planning and Academic Affairs, Marketing and Student Affairs, Finance Affairs, Administrative Affairs, Human Resources, National Affairs, and International Affairs. There is also a Vice President and General Manager of Sistema TV., the only non academic institution. The other institutional officers are the Chancellors of the four academic institutions, which are: Universidad Ana G. Méndez-Recinto de Gurabo, Universidad Ana G. Méndez-Recinto de Cupey, Universidad Ana G. Méndez-Recinto de Carolina, and UAGM Recinto Online. A fifth Chancellor manages the operation of all the academic institutions established in Florida, USA. All Chancellors and Vice Presidents respond directly to the President/CEO, who appoints them.

The System's bylaws define the objectives, powers, officers, committees, meetings and the general handling of the financial affairs of the institutions. The Governing Manual describes the way in which the Board of Directors governs all institutional affairs. The Institutional Bylaws specify the way in which each one of the autonomous institutions will be operated and administered.

The Board is the policy-making, legislative and fiscal oversight body of the System. In addition to appointing the President, the Board is responsible of all corporate affairs and control of the corporation. It approves the institutional mission and vision, the strategic and long range institutional plans, and its annual and special budgets. The President/CEO, who is also a Board member, is directly responsible to the Board for the administration of all corporate business; including the appointment of VPs and institutional officers; personnel

administration and compensation; and recommendation to the Board of academic programs and long-range institutional plans.

The Board has four working committees:

Government  
Academic and Student Affairs  
Finance  
Audit

## BOARD OF DIRECTORS

Dr. Félix Rodríguez Schmidt, President of the Board  
Dr. René A. Soto Torres, Vice-president of the Board and Permanent Member  
Mr. José F. Méndez, Jr. President of SUAGM and Permanent Member  
Dr. José F. Méndez González, President Emeritus and Permanent Member  
Mr. Héctor A. Jiménez Ramírez  
Mr. Rafael A. Nadal Arcelay, Esq. Permanent Member  
Sr. Ramiro Millán Catasús  
Dr. Herminio Martínez, Permanent Member  
Mr. Wilfredo Cosme Ortiz  
Sra. Rita Dendariarena DiMartino  
Lcda. Delia Castillo de Colorado Dra.  
Migdalia Torres Rivera

Gloria Castillo, Secretary of the Board  
José E. de la Cruz Skerrett, Esq., Legal Advisor

## CAMPUS ADMINISTRATION

### Office of the Chancellor

**David Méndez** / Chancellor  
**Iris N. Serrano** / Director of Public Relations  
**Jacqueline Mullen-Hunt** / Vice Chancellor of External Resources  
**René Rhonda** / Alumni Director  
**Carmen T. Ruiz** / Director, Josefina Camacho de la Nuez Museum and Center for Humanistic Studies  
**Vivian Cordero** / Director of International Affairs

### Office of the Vice Chancellor

**Nydia V. Bou** / Vice-Chancellor  
**Diannie Rivera** / Associate Vice-Chancellor  
**Aleyda Siaca** / Associate Vice-Chancellor, Licensing and Accreditation  
**Ernesto Espinoza** / Associate Vice-Chancellor, Assessment and Faculty Development  
**Edwin R. Marrero** / Assistant Vice Chancellor of Student Retention and Academic Success  
**Israel Rodríguez** / Director, Virtual Education

### Graduate Studies and Research

**Minerva Soto** / Student Services Coordinator

## School of Liberal Arts and General Education

**Félix R. Huertas** / Dean  
**Phillip Murray** / Associate Dean  
**Beatriz Cruz** / Director of the Department of Spanish and Modern Languages  
**Jennet Rodríguez Betancourt** / Director Department of English  
**Juan E. Roque** / Director of the Department Humanities and Social Sciences  
**Sylvia Casillas** / Director of the Language Laboratories

## School of Business and Entrepreneurship

**Juan Carlos Sosa** / Dean  
**Litza Meléndez** / Associate Dean  
**Linda S. Miranda** / Administrative Director  
**Lillian Hernández** / Director of Student Services  
**Sharon Correa** / Academic Director

## School of Education

**Elaine Guadalupe** / Dean  
**Pilar Dávila** / Associate Dean  
**Luis A. Mondríguez** / Associate Dean, Physical Education Department  
**Maritza Oyola** / Associate Dean for Student Services  
**Carmen D. Rodríguez** / Administrative Services Director

## School of Engineering

**Rolando García** / Dean  
**Idalides Vergara-Laurens** / Associate Dean  
**Oscar A. Sáenz** / Director, Industrial and Management Engineering Department  
**Juan C. Morales** / Director, Mechanical Engineering Department  
**José L. Colón** / Director, Electrical and Computer Engineering Department  
**Nelson Gómez** / Director, Civil Engineering Department  
**Nelson Martínez** / Director, Institute of Engineering Technology  
**Daisy Román** / Administrative Director  
**Luz Vilches** / Director, Engineering Advising Office (EAO) and Student Services

## School of Health Sciences

**Mayra Figueroa** / Dean  
**Luisa M. Ramírez** / Associate Dean  
**Héctor Osuna** / Associate Dean  
**Joannie Ortiz** / Administrative Affairs Director  
**Wanda Rodríguez** / Student Services Director  
**Frank Valentín** / Director, Naturopathic Medicine Doctoral Program  
**Awilda Rosa** / Director, Health Professions Department  
**Minerva Mulero** / Director, Nursing Department  
**Kelli M. Killingsworth** / Director, Nutrition and Dietetic Department  
**Tania J. Maldonado** / Director, Veterinary Technology Department

## School of Natural Sciences and Technology

**Teresa Lipsett-Ruiz** / Dean  
**Ileana González** / Associate Dean  
**María F. Barberena** / Director, Department of Biology  
**José J. Ducongé** / Director, Department of Chemistry and Physics  
**José Sánchez** / Director, Department of Mathematics  
**Mayra Cummings** / Director, Medical Technology  
**Sandra Ayala** / Laboratory Manager  
**Luz N. Trinidad** / Director of Administrative Affairs  
**Ivelisse Díaz-Alejandro** / Director of Student's Affairs  
**Ilianex Oquendo** / Academic Adviser

## School of Social Sciences and Communications

**María del C. Santos** / Dean  
**Tomasita Pabón** / Associate Dean, Social Sciences Department  
**Edward Fankhanel** / Associate Dean  
**María M. Ortiz** / Director, Social Work Department  
**María Vera** / Director, Communications Department  
**Jessica Velázquez** / Director, Psychological Services Clinic  
**Rosa Rodríguez** / Administrative Director

## International School of Design and Architecture

**Auroris Mateo** / Dean  
**Elizabeth Castrodad** / Associate Dean for Academic Affairs  
**Rosa Musí** / Associate Dean for Administrative Affairs  
**María Gabriela Flores Kearns** / Director, Architecture Department  
**Ana Rebecca Campos** / Director, Fashion Design Department

## School of Professional Studies and Continuing Education

**Mildred Y. Rivera** / Assistant Vice-President and Dean  
**Erick Vázquez** / Acting Associate Dean  
**Mabelis Viera** / Director, Integrated Services  
**Jocelyn Gómez** / Academic Director  
**Karla González** / Executive Director of Continuing Education

## School of Technical Studies

**María E. Flores** / Dean  
**Irving A. Colón** / Academic Director  
**Amarilys Rivera** / Academic Affairs Coordinator  
**Norberto Pagán** / Academic Advisor  
**Charlotte Pérez** / Student Services Coordinator  
**María de los A. Rodríguez** / Administrative Services Coordinator

## School of Public Security Institute

**Jhon Sanabria** / Assistant Vice-President and Dean  
**Ángel M. Guzmán** / Associate Dean  
**Wanda Rodríguez** / Director  
**Ángel R. Ramírez** / Director, Administration

## Information Resources

**Sarai Lastra** / Vice Chancellor of Information Resources and Director Virtual Library  
**Luis A. Arroyo** / Director, Information Technologies  
**José Medina** / Director, Informatics and Telecommunications

**Luisa Torres** / Director of the Library  
**Julie Malavé** / Director, Administrative Services

### Off-Campus Centers

**Jessie Hernández** / Director, Off-Campus Center Yabucoa  
**Maricelli Zaragoza** / Director, Off-Campus Center Cayey  
**Luis A. Ruiz** / Director, Off-Campus Center Isabela  
**Irma del Pilar Cruz** / Director Off-Campus Center Ponce  
**Ramón E. Díaz** / Director Off-Campus Center Barceloneta

### Student Affairs

**Brunilda Aponte** / Vice Chancellor of Student Affairs  
**Juanita Cruz** / Associate Vice Chancellor of Student Affairs  
**María V. Figueroa** / Associate Vice Chancellor of Student Affairs  
**Samiris Collazo** / Assistant Vice Chancellor for Wellness and Quality of Student Life  
**Carmen Pulliza** / Assistant Vice Chancellor, Career and Placement  
**Zoraida Ortiz** / Registrar  
**Melba Sánchez** / Associate Vice-Chancellor of Admission and Marketing  
**Oscar J. Carrasco** / Director, Financial Aid  
**Gabriel López** / Bursar  
**Wilnelia Hernández Castro** / Director Information Systems  
**Luz E. Berríos** / Nurse, Health Services  
**Angel Vázquez** / Director, Social and Cultural Activities  
**Eva Merced** / Administrative Director  
**Diriee Y. Rodríguez** / Director, Admissions  
**Anabelle Solá** / Director, Recruitment

### Physical Facilities, Operations and Maintenance

**Mayra Rodríguez** / Operations and Physical Facilities Manager  
**Francisco Caballero** / Assistant Manager of Physical Facilities  
**Julio Colón** / Assistant Manager, Administrative Services  
**Carlos R. Centeno** / Director, Security  
**Rubén Monsanto** / Maintenance Supervisor

### Statement of Legal Control

The SUAGM is a private nonprofit corporation registered under the laws of the Commonwealth of Puerto Rico. Its Board of Directors under the system wide bylaws governs the corporation.

### Non-Discrimination Statement

The SUAGM and its institutions do not discriminate on the basis of race, handicap, national or ethnic origin, creed, color, gender, social condition or political, religious, social or trade union beliefs.

## LEGISLATIVE BOARDS

The Administrative Council of Universidad Ana G. Méndez Recinto de Gurabo is the legislative body of the Institution. Its main function is to establish the institutional

policy of the University in accordance with the bylaws of the SUAGM. The Administrative Council includes the chancellor, who chairs it, the vice chancellor, the vice chancellor of student affairs, the manager of physical facilities and operations, the deans of the academic divisions, one (1) faculty representatives for each school, two (2) directors representatives of university centers and two (2) student representatives.

The Academic Board recommends the academic policy of the Institution, adopts new academic programs, approves the awarding of degrees and evaluates hiring, contract renewals, promotions, and leaves of absence for faculty members.

The Academic Board consists of the vice chancellor, the library director, nine (9) school associate deans, two (2) student representatives, one (1) faculty representative for each school, and as many elected faculty members as needed to provide for their majority on the board. The chancellor is an ex officio member of the Academic Board.

## GRADUATE STUDIES AND RESEARCH

### Science and Technology Building

**787-743-7979 Ext. 4270**

**Fax 787-743-115**

<http://ut.suagm.edu/>

Established in 2003, the Center for Graduate Studies and Research (CGSR) is an administrative unit whose main responsibility is to provide resources and support services for graduate students who wish to pursue doctoral studies. Through workshops, seminars and conferences, the Center contributes to the University's image of academic excellence and leadership. The CGSR also promotes scholarly research among students and faculty.

The CGSR is located in the Science and Technology Building and is directed by the Associate Vicechancellor (AV) for Graduate Studies and Research. The AV interacts with all the UT Schools and their respective coordinators of doctoral programs. In this way, the CGSR and the coordinators work together to ensure that all doctoral students are well attended and supported.

## MISSION

The CGSR is devoted to the advancement of knowledge through research activities and to the establishment of ideal support conditions for UT doctoral students. The Center also collaborates with the six UT Schools to stimulate and enhance academic and scientific experiences.

## VISION

The CGSR is a key facilitation agent that promotes excellence through academic and leadership opportunities for graduate students by encouraging the development of research activities.

## SUPPORT SERVICES

The CGSR is actively involved in the recruitment, retention and graduation of doctoral students at UT. To this end, the Center provides assistance from the initial application stages to the completion of a doctoral degree. Hence, the Center supports the following initiatives:

- Academic advising
- Areas for group study
- National and international conferences
- Research a UT recognition program
- Teaching assistants program
- Research programs
- Individualized services for registration and financial aid
- Orientation on the financial aid process
- Detailed information on doctoral programs
- Professional development seminars
- Resource room for doctoral students

Ultimately, the CGSR is a clearinghouse of information and resources to ensure the graduate students' successful completion of an advanced degree while enhancing their personal, social, academic and professional experiences.

## RESEARCH INSTITUTES

### PUERTO RICO ENERGY CENTER (PREC)

The Puerto Rico Energy Center is an R&D facility in solid waste disposition and renewable energy. The technological areas of the center are plasma gasification and vitrification, photovoltaic solar cells, and fuel cells. The center will be available for demonstrations of potential applications benefiting municipalities, the pharmaceutical industry, and other private and public partners, helping to promote R&D efforts and business development. It provides education, awareness, and technical assistance activities on renewable energy, with a particular interest in environmentally friendly solid waste treatments.

Under the leadership of the Dean of the School of Engineering, PREC concentrate its efforts on the implementation of the project's first phase activities:

- Construction of new PREC facilities
- Development of Cruise Ship Solid Waste Disposal Prototype
- Establishment of initial research activities related to:
  - Residue Composition Analysis
  - Hydrogen Production
  - Fuel Cell Laboratory activities

## ACT GLOBAL

**ACT Global** is a Technology Accelerator of SUAGM, Inc.d/b/a Universidad Ana G. Méndez-Recinto de Gurabo, Inc. created with the principal goal of generating businesses and ventures by means of providing the technical ecosystem for entrepreneurs to transform their wellconceived ideas into marketable products through the acceleration program **Startup.pr**.

The ecosystem provided by Startup.pr Acceleration Program consists in access to laboratories, highly specialized prototyping equipment, technical support and access to the Schools of Engineering, Natural Sciences and International Design and Architecture, as well as other schools as needed, of Universidad Ana G. Méndez-Recinto de Gurabo providing startups the next level of development and a way to escalate to a global market.

## MISSION

Provide technical ecosystem and financial assistance to accelerate innovative and technology-based early stage companies as a contribution to Puerto Rico growth initiatives.

## VISION

Be the epicenter of the development of technology-based solutions with global impact in Puerto Rico.

### IMPORTANT NOTE:

This catalog contains the major points of the current agreements between the students and Universidad Ana G. Méndez-Recinto de Gurabo. The University limits its agreement to the semester or session in which the student is duly enrolled and for which (s)he has paid the corresponding fee.

## ADMISSIONS

### GENERAL ADMISSION REQUIREMENTS

Students candidates applying for admission to Universidad Ana G. Méndez-Recinto de Gurabo must meet the following requirements:

1. Graduate from secondary school licensed by the Puerto Rico Council on Education or its equivalent.
2. Have taken the The University Admissions and Assessment Tests (PEAU) of College Entrance Examination Board (CEEB) or the placement test in the areas of Spanish, English and Math provided by the University.
3. Some Schools may have other specific program requirements. Refer to School's section in the Catalogue for more information. Evidence of complaints with these additional requirements must be submitted to the School to which the student is applying to admission.

Admission requirements vary between specific colleges and programs. Visit the following link form more information:

<http://ut.suagm.edu/es/admisiones-mercadeo/requisitosde-admision>.

### HIGH SCHOOL STUDENTS

#### ADMISSION PROCESS AND DOCUMENTATION

High school students in their senior year can submit the admission application and provide evidence of their cumulative grade point average (GPA) (computed at the end of the first semester of the senior year) and their University Admissions and Assessment Tests (PEAU) of College Entrance Examination Board (CEEB), SAT or ACT test results.

Students in their junior year of high school can start an early process by filling in the admission application and providing evidence of their cumulative GPA computed at the end of the second semester of their junior year.

To complete the admissions record process, all applicants must provide the required documentation listed below:

1. Fill and submit the admission application and pay the non-refundable fee.
2. Submit a copy of the University Admissions and Assessment Tests (PEAU) of College Entrance Examination Board (CEEB), SAT or ACT results (if (Institution) was not selected to receive results directly) or take the placement test in the areas of Spanish, English and Mathematics provided by the university.
3. Health and vaccination certification for applicants younger than twenty-one (21) years of age.

4. Submit one of the following as part of the evidence for program-specific requirements:
  - a. Students from the public schools system that provide student GPA via an electronic system recognized by the Department of Education of Puerto Rico, will not need to present physical evidence of the transcript. The electronic transcript sent by the school must show the academic GPA computed at the end of the first semester of the senior year of high school, to be evaluated as part of the admission process.
  - b. Students from public and private schools that do not provide the electronic service data transfer recognized by the Department of Education of Puerto Rico, must provide an official transcript comprising their high school years up to the first semester of the senior year of high school, to be evaluated as part of the admission process.
5. All candidates must submit one of the following documents as evidence of having completed high school or its equivalent:
  - a. Original Certification of graduation
  - b. Official document of an institution or agency recognized by the U.S. Department of Education that certifies the equivalency of a high school degree.

Students must present evidence of high school completion or its equivalent before the first day of class or within 20 days after the beginning of classes. The institution may invalidate the student's admission if this requirement is not met. Veterans and beneficiaries must also submit all admission requirements before the first day of class or within 20 days after the beginning of classes.

### ADMISSION FORMULA

Some schools applies the Admission Index formula. It is computed using the results of the following areas of the University Admissions and Assessment Tests (PEAU) of College Entrance Examination Board: verbal aptitude, mathematics aptitude and English achievement. The high school grade point average is also considered.

### PLACEMENT EXAMS: ENGLISH/SPANISH/MATHEMATICS

1. Incoming first-year students who do not have their test results from the College Board, MUST take the UT placement exams. Information about when and where the tests are offered is provided by the Vice Chancellory of Retention and Student Development.
2. The placement exams are used to assess student performance and proficiency in Spanish, English, and

Mathematics. The scores of these tests are used to place students in courses that are appropriately challenging.

3. Students with Advanced Placement College Board Scores of 3 or higher in Spanish, English or Mathematics are exempt from taking the corresponding placement exam and are placed in the subsequent sequential course.
4. If you are a transfer student, and your transcript has been evaluated by your admitting college(School), at the discretion and approval of the Office of the Registrar and the corresponding School, you may receive credit for a particular English/Spanish/Mathematics course that you have taken at another institution. If you are awarded transfer credit, your college (School) will advise you regarding the next English/Spanish/Mathematics course you may need to take.
5. If you are a transfer student who has NOT been given transfer credit for an English/Spanish/Mathematics course, you will need to take the corresponding placement exam.
6. Students who have not taken English/Spanish/Mathematics at the university level, MUST take the UT placement exam(s) before enrolling in any English/Spanish/Mathematics course.

#### **READMISSION**

1. Students must apply for readmission if they interrupted their studies and did not attend the university for one semester or longer. (Summer sessions do not count as interruptions.)
2. Students must complete the required number of credits for their **year of study**.
3. Students must comply with the requirements of the study program of their choice as well as other general requirements that may apply.
4. In order to be readmitted, the period of suspension for academic or disciplinary reasons must have elapsed.
5. Candidates for readmission may be required to have an interview with the Admissions Committee. It is comprised of the Vice Chancellor of Student Affairs or his representative, the Director of Admissions, the Vice Chancellor for Wellness, the Registrar, the Vice Chancellor or his representative and the dean of the school. In special cases, the Committee will have the final authority to determine admissions.

#### **TRANSFER STUDENTS**

Transfer students are considered for admission if they have followed a course of study in an accredited university and have completed no fewer than 12 credits in the institution

from which they proceed. Their grade point average (GPA) must be the institutional minimum requirement. The students must not be under academic or disciplinary sanction in the institution from which they proceed.

In order to be admitted, students wishing to transfer must meet the requirements of the program of their choice.

In some cases professional accreditation agencies require that concentration or specialization courses are approved in a program accredited by the same agency. Specific information may be provided by the Admissions Office.

#### **COURSE VALIDATION**

Transfer students have the option of validating courses taken no more than 12 years prior to admission for equivalent courses offered at Universidad Ana G. Méndez Recinto de Gurabo. The students must have a minimum grade of C in each course.

#### **ADVANCED PLACEMENT TEST**

Credit will be granted for the Advanced Placement Tests of the College Entrance Examination Board if the score obtained is 3 or more, on a scale of 1 to 5.

#### **PRE-COLLEGE COURSES**

Credit will be granted to students for courses offered by Universidad Ana G. Méndez-Recinto de Gurabo at the high school level. These courses must be in addition to those required for graduation and must be approved with a grade of A, B or C. The various schools will establish the grades required in the courses to be credited.

The Pre-College Program will keep record of the student's progress and will send evidence of the completed courses to the Registrar's Office, after the student is officially admitted to the University. This documentation will become part of the student's file.

#### **RESIDENCE**

All transfer students must observe the following rules to obtain residence at the University in order to qualify for graduation:

1. Complete the last (30) thirty credits of their bachelor's degree at Universidad Ana G. Méndez-Recinto de Gurabo, (12) of which must be in their major field of study.

2. Successfully complete the last twelve (12) credits of the associate degree at Universidad Ana G. MéndezRecinto de Gurabo.
3. Twelve (12) credits of residence (set by each program) will be required of students from Off-Campus Centers.

### TRANSIENT STUDENTS

Transient students must be authorized by their own university to take courses at Universidad Ana G. MéndezRecinto de Gurabo for no longer than two academic semesters.

Universidad Ana G. Méndez-Recinto de Gurabo admits visiting students or auditors. They must apply for admission within the time limit established by the Admissions Office. They must attend their regular courses but will receive no credits or grades. These students are not eligible for financial aid.

Authorization for enrollment of transient students and auditors does not constitute a formal admission into the institution, and it terminates at the end of the academic session for which it was granted. To obtain regular student status, students must comply with the admission requirements in force at the time when the application for admission was filed. All applications are subject to an interview by the Admissions Committee.

### INTERNATIONAL STUDENTS

Universidad Ana G. Méndez-Recinto de Gurabo accepts foreign students as permitted by immigration laws. Foreign students are subject to the admission, readmission and transfer requirements established by the Universidad Ana G. Méndez-Recinto de Gurabo.

Online and out of state students are part of international student component for internal purpose. However, online students do not have to comply with the same immigration laws.

### ACADEMIC YEAR

The academic period is divided into two semesters and one summer, which in turn can be subdivided into smaller sessions called terms.

### EFFECTIVE DATES

Admission or readmission at Universidad Ana G. MéndezRecinto de Gurabo will be valid for one semester of

the academic year, beginning on the date it is granted. Applications that do not include the required documents, or that do not meet all the established requirements, will be considered provisional. If all the documents are not received within 60 days from the first day of class, the institution may invalidate the provisional admission.

Applications forms should be requested from:

**UNIVERSIDAD ANA G. MÉNDEZ-RECINTO DE GURABO**  
**ADMISSIONS OFFICE P**  
**O BOX 3030**  
**GURABO PR 00778**  
**TELEPHONE: (787) 746-3009**  
 Or visit web: <http://ut.suagm.edu/es/ut/solicita-admision> or [www.solicitaadmision.com](http://www.solicitaadmision.com)

### TUITION AND SPECIAL FEES

Once a year the Office of the Vice President of Financial Affairs publishes a circular letter with information about tuition costs for all academic programs, and special fees for student services at Universidad Ana G. Méndez-Recinto de Gurabo. Upon request, this document is available at the Bursar's Office to students and to anyone in the institution who requests it.

Tuition, fees and service charges must be paid in full during registration or at the time the student requests services. Payments can be made in cash or by check, money order, debit cards or credit cards. Receipts for all transactions must be requested and retained, and presented with any claim or request for adjustment. The Bursar's Office will not accept claims without receipts.

In accordance with established rules and regulations of the institution, the SUAGM may amend standards and tuition fees.

The Deferred Payment Plan is available to parents, tutors or adult students who do not receive financial aid. The recipient will sign a promissory note and payments will be made on or before the specified date on the promissory note. If the University is forced to contract legal or collection services in order to collect, the student will pay the legal and/or agency fees.

### CLEAR STATEMENT

Students with an outstanding debt balance will not be allowed to take final examinations until such balance is paid in full. Upon receipt of payment, the Bursar's Office will issue

a Clear Statement, which must be presented by the student at each examination. Students who do not comply with this requirement will receive a grade of Incomplete.

### **ADJUSTMENTS AND REFUNDS**

Active students who request total withdrawal before 60% of the registration period has ended will receive an adjustment in the fees and assigned funds in accordance with federal regulations for programs with Title IV funds. In addition, students identified as NA (not attending) a course will be charged a 25% fee for each course in which they enrolled. These fees will not be covered by federal funds. During the add/drop course adjustment period, students can add or drop sections without additional cost.

### **FINANCIAL AID**

Universidad Ana G. Méndez-Recinto de Gurabo makes every effort to help its students obtain government financial aid for those who are unable to begin or continue their university education without such aid. There are three categories of financial aid: scholarships, loans and workstudy programs.

### **SCHOLARSHIPS**

Scholarships are granted according to the educational and financial needs of the student. Only undergraduate students are eligible to receive funds through Pell Grants. However, a Free Application for Federal Student Aid (FAFSA) application is needed to determine the student's eligibility for other federal aid programs.

### **STATE FUNDS**

The Council of Higher Education of Puerto Rico provides funds to supplement the cost of graduate education. This aid applies to all students who are eligible according to the student's eligibility index provided by the FAFSA evaluation.

### **FEDERAL DIRECT LOANS**

The Financial Aid Office will recommend and process the loan directly to the U.S. Department of Education in its electronic form. This loan must be repaid in cash; the repayment should begin six (6) months after the student graduates or ceases to study. The Federal Government will pay the interest while the student is enrolled in a recognized post-secondary

institution. Borrowers should check the interest rate on their promissory note. The variable rates do not exceed 8.25 percent.

### **WORK-STUDY PROGRAM**

This program provides jobs for undergraduate and graduate students. The Financial Aid Office assigns a specific amount of hours that the student works on campus.

### **FINANCIAL AID APPLICATION AND RENEWAL**

Students who have participated in the financial aid program during the first term do not need to renew their financial aid program during the same academic year if they comply with the requirements for continuing in the program. Financial aid must be requested through the FAFSA form on the Web at: [www.fafsaontheweb.com](http://www.fafsaontheweb.com) or visit the financial aid office.

### **UNIVERSIDAD ANA G. MÉNDEZ-RECINTO DE GURABO FINANCIAL AID**

**P O BOX 3030**

**GURABO, PUERTO RICO 00778**

**Or visit web:**

<http://ut.suagm.edu/es>

The FAFSA includes the list of requirements and documentation necessary to apply for financial aid.

### **CREDIT HOUR DEFINITION**

At Universidad Ana G. Méndez-Recinto de Gurabo (AGM) course work is measured by means of a credit hour unit, which reflects the amount of time spent in class, and the amount of outside preparatory work expected for the class. Thus, looking for consistency and transferability within and between institutions, UT conforms to commonly accepted practices in higher education. The Institution adopts and apply a policy on credit-hours consistent with the US Department of Education definition of "credit hour" as:

"...An amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than:

- (1) One hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work for approximately fifteen weeks for one

semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or,

- (2) At least an equivalent amount of work as required in paragraph (1) of this definition for other academic activities as established by the institution, including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.”

#### **IMPORTANT NOTE**

The above-mentioned aid is conditioned to the availability of the respective federal, state and institutional funds. It is the student’s responsibility to take the steps necessary to obtain financial aid from the government. Such aid is directed to the student as a citizen and not necessarily to the University. Universidad Ana G. Méndez-Recinto de Gurabo is a private, secular, nonprofit institution, and is independent of any government.

The institution fully complies with the Privacy Rights of Parents and Students Act of 1974 (Title IV of the U.S. Public Law 90-247), as amended, which specifically governs access to records maintained by institutions to which funds are made available under any federal program for which the U.S. Commission of Education has administrative responsibility, and the release of such records. Such institutions must give parents of students access to official records that are directly related to the students and an opportunity for a hearing to challenge such records on the grounds that they are inaccurate, misleading or otherwise inappropriate.

Institutions must obtain the written consent of parents before releasing or relinquishing data with personal identification from the student records, except to certain specified parties; that parents and students must be notified of these rights; that these rights transfer to students at certain points; and that an office adjudicate complaints and violations of this law.

In order to receive financial aid, students must comply with the Satisfactory Academic Progress Policy.

### **ACADEMIC REGULATIONS**

#### **SATISFACTORY ACADEMIC PROGRESS (SAP) POLICY**

Satisfactory Academic Progress (SAP) measures the academic progress of the student towards the attainment of an academic credential. Federal regulations require that all students who receive Title IV funds as part of their financial aid package maintain SAP. The SAP policy applies to all students within categories, e.g., full-time, part-time, undergraduate, and graduate students.

The evaluation criteria for SAP include a qualitative and quantitative component.

The qualitative measure is based on the cumulative grade point average (GPA). The quantitative measure is based on the number of credit hours the student attempts and earns. This calculation is completed by dividing the cumulative number of credit hours a student successfully earns by the total number of credit hours the student attempts over the student's academic career in a particular program at the Institution. Students are also expected to complete their program within 150 percent (%) of the length of the program as measured in credits.

### **MAINTAINING SATISFACTORY ACADEMIC PROGRESS**

The academic progress of students enrolled in associates, bachelors, masters and doctorate degree programs will be assessed at the end of every two (2) semesters. The academic progress of students enrolled in technical and postgraduate certificate programs will be assessed at the end of each semester. The Registrar’s Office will notify students in writing, through e-mail, of their academic status.

Students are prohibited from receiving federal student financial aid after attempting 150% of the number of credits required for their academic program. This calculation includes all attempted credits, including transfer credits, related to the student’s academic program.

To maintain good standing, students must comply with the following:

#### **QUALITATIVE COMPONENT**

The Institution establishes specific minimum GPA requirements by program level (i.e., certificate, associate, bachelor, master and doctorate). The minimum GPA increases as credits attempted increase. Students enrolled in a program of more than two academic years must have a GPA of at least a “C” or its equivalent. Regardless of the student’s enrollment status, the Institution considers that a student is at the end of his/her second academic year after

two calendar years of attendance (i.e. four semesters, excluding the summer term).

Refer to Appendix, Satisfactory Academic Progress Tables, for the qualitative components per program level.

### QUANTITATIVE COMPONENT

The Institution uses a graduated completion percentage by program level. The student must earn the minimum percentage of attempted credits depending on the program level and academic year in which the student is enrolled.

All credits attempted and earned, including transfer credits that count towards the program of study of the student, are considered in the calculation.

The student must complete the program within 150% of the length of the program of study to be eligible for Title IV funds. For example, students in a bachelor's degree program must complete 120 credits and may attempt up to 180 credits ( $150\% \times 120 = 60$ ;  $60 + 120 = 180$ ).

Refer to Appendix, Satisfactory Academic Progress Tables, for the quantitative components per program level.

If a student wants to enroll in a different academic program, the student must request approval from the Dean of the School. Even though only attempted and earned credits from the student's current program of enrollment are included in the quantitative measure and only the grades for courses from the student's current program of enrollment are included in the qualitative measure, students are encouraged to carefully consider program changes because federal regulations limit total lifetime financial aid eligibility.

Students who discontinue their studies and subsequently apply for readmission will be readmitted under the current SAP policy and will have the same SAP status that resulted as of the end of the last term attended. Students applying for readmission must fill and submit the admission application and pay the non-refundable fee. Admission Office will evaluate the student by SAP. If the student does not meet SAP, the University will determine if he/she may be readmitted, provided an appeal has been approved.

Students requesting admission into a new academic program after having completed his/her prior program of study will have to fill and submit the admission application and begin the new program with a new SAP history, unless the student transfers credits into the new academic program in which case those transfer credits will be considered when measuring SAP.

Impact of Course Repetitions, Withdrawals, Incompletes and Transfers on Satisfactory Academic Progress

- **Course Repetitions** - Federal regulations limit repetition of courses that can be paid with Title IV financial aid funds. Please check with the Financial Aid Office if you are not sure whether a course can be repeated with financial aid. If a student repeats a course, only the highest grade earned will be included in the student's cumulative GPA. However, each attempt at the course will count as credits attempted.
- **Withdrawals** - If a student withdraws from a course, the credits for the course count toward the determination of credit hours attempted but will not be considered in the cumulative GPA.
- **Incomplete Courses** - If a student has an incomplete in a course, the credits for the course count towards the determination of credit hours attempted. The course will not be considered in the cumulative GPA until a grade is assigned.
- **Transfer Credits** - If a student transfers in credits from another institution, the accepted credits for the courses count toward the determination of credit hours attempted and earned, but will not be considered in the cumulative GPA. Only those transfer credits that apply to the student's program of enrollment at the Institution will count as credits attempted and earned. Refer to the Institution's catalog for requirements on accepted transfer credits from another institution.

### DEVELOPMENTAL COURSES

Financial aid recipients may receive aid for a maximum of 30 semester credit hours in developmental coursework. Students enrolled in developmental courses are expected to receive passing grades in those courses in order to progress into the next term. Developmental courses count towards the determination of credit hours attempted and earned and will be considered in the cumulative GPA when determining SAP.

Financial Aid Warning and Failure to Meet Satisfactory Academic Progress

Students enrolled in technical and postgraduate certificate programs, for which SAP is evaluated at the end of each semester, will be placed on financial aid warning status for the next semester attended as a consequence of not making satisfactory progress. The Institution uses this status without appeal or any other action by the student. The Registrar's

Office will notify the student in writing, through e-mail, of the financial aid warning status and that financial aid eligibility is retained during this period.

The student must meet SAP as of the next evaluation point (by the end of the next semester attended) in order to receive financial aid in future terms. Students who did not meet SAP as of the next evaluation point become ineligible for federal financial aid funds and may continue their studies at the Institution at their own cost. If the student believes there are extenuating circumstances associated with the student's inability to meet SAP, he/she may appeal his/her termination status to the Appeals Committee. See section titled Financial Aid Ineligibility and Appeal Procedures below.

### **SCHOLARSHIP AND GRANT RECIPIENTS**

Other scholarship and grant programs may not allow for a financial aid warning semester. In these cases, failure to meet SAP in any given term may result in the termination of scholarship or grant funds. Please refer to your scholarship or grant information materials or contact the Financial Aid Office at 787 743-7979 extension 2352.

### **FINANCIAL AID INELIGIBILITY AND APPEAL PROCEDURES**

A student will be advised in writing, through e-mail, when he/she has lost financial aid eligibility due to the failure to meet SAP and will be advised of the process for reestablishing financial aid eligibility. Students who have lost eligibility for financial aid based on a failure to meet SAP standards may appeal their loss of eligibility if they have suffered extenuating circumstances, such as the following:

- Student's injury or illness,
- Death of a relative, or
- Other special circumstances.

Students may not use financial aid to make retroactive tuition and fee(s) payments.

As part of the request for an appeal, the student must present how the critical situation prevented him/her from meeting the academic progress. The student must also describe how his/her situation has changed in order to allow the student to meet the SAP standards at the next evaluation. As part of the appeal, the student must submit the following:

- SAP Appeal Form (please refer to the form for further instructions)
- Signed dated letter

- Supporting documentation (third-party documentation may be required as appropriate)

In order for the appeal to be considered, the student must submit the SAP appeal documentation to the Institution's Professional Counselor, who will submit the documentation to the Appeals Committee. The Appeals Committee will evaluate the merits of the appeal by reviewing the documentation submitted as well as the student's previous academic performance at the Institution. The Appeals Committee may request additional information or documentation, as needed. The Vice Chancellor for Student Affairs will notify the student in writing, through e-mail, the determination made by the Appeals Committee.

The student must submit an appeal to the institution in writing after the receipt of the failure to meet SAP notification. The Institution will have ten (10) calendar days for the evaluation process after receiving the student's appeal documentation.

### **FINANCIAL AID REINSTATEMENT**

If the Institution approves a SAP appeal, the student will be placed on financial aid probation for the next semester attended. The student may also be placed on an academic plan. The Institution will advise the student in writing of the progress the student must achieve to ensure he/she meets the SAP policy or the requirements of the academic plan by the end of the next semester attended. Students will be eligible for financial aid while on financial aid probation.

After the end of the financial aid probation semester, the Institution will measure the student's academic progress. The student will retain financial aid eligibility only if the student meets published minimum SAP standards or meets the requirements of the academic plan at the end of the semester of financial aid probation. If the student does not comply with SAP or meets the requirements of the academic plan, he/she is not eligible for financial aid funds, unless the student successfully appeals or the student reaches satisfactory academic progress.

Any student who loses financial aid eligibility due to failure to meet SAP and attends school at his/her own cost will regain financial aid eligibility in the academic semester following the semester in which the student meets the minimum SAP standards. Students may not use financial aid to make retroactive tuition and fee(s) payments.

## REGISTRATION FOR COURSES

- a. The Vice Chancellor of Student Affairs establishes the period for the registration process and includes the enrollment period in the calendar.
- b. Students are required to register during the period specified in the calendar.
- c. The official notification of admission is required to begin the enrollment process.
- d. For registration to be official, the bursar must validate the student's program-receipt.

Students are also required to register during the assigned calendar period, for day or evening, sessions, and this information will become part of their academic record. The institution has the right to change the time, the calendar or the classrooms of announced courses and to close or eliminate sections or courses from its academic offerings.

The Academic Calendar is published on our website at: <http://ut.suagm.edu/es/academia/calendario-academico>.

## CLASSIFICATION OF STUDENTS

Full-time regular students are those who have registered for programs of no less than twelve (12) credit hours and are degree-seeking candidates. Half-time students are those with an academic workload of six (6) to eight (8) credits hours and are degree-seeking candidates. Less than half-time students are those with an academic workload of five (5) credit hours or less and are degree-seeking candidates. Three quarter students are those with an academic workload of nine (9) to eleven (11) credit hours and are degree-seeking candidates.

## ACADEMIC LOAD

Academic load will not exceed twelve (12) credits per term for students with a GPA of 2.00 or less, and eighteen (18) credits per term for students with a GPA of 2.01 to 3.00. An academic load or more than twenty-one (21) credits will require prior approval by the dean of the school.

For summer sessions, academic load will not exceed twelve (12) credits, distributed over two (2) sessions. An academic load or more than twelve (12) credits will require prior approval by the dean of the school and a referral by a counselor.

## DISTANCE EDUCATION

The Distance Education unit of the Vice Chancellor of Academic Affairs of the Universidad Ana G. Méndez-Recinto de Gurabo is committed to provide required academic support to the courses in their four forms: face to face, blended, on-line and with videoconferencing/telepresence using any technological means. In the face to face courses (web-supported), hybrid (blended) and on-line courses the technological tool used to incorporate all activities is the educational platform. In the videoconferencing/telepresence courses an interactive, bidirectional and multi-media transmission is used between two or more points.

The only on-line program at UAGM is offered by the School of Business and Entrepreneurship which is Business Administration with specializations in Management, Marketing, Human Resources, and Materials Control and Administration. The goals and objectives of the on-line program and courses are the same as those for face to face traditional courses.

The Schools of Education, Engineering, Health Sciences and Natural Sciences and Technology are offering courses using videoconferencing and or tele-presence.

The Distance Education Unit ensures that all professors that teaches an on-line course are duly certified. Also, the unit oversees the instructional design and the quality in order that the courses are either equal or better than a face to face one. The Unit provides structured surfing and synchronous and asynchronous tools in the institutional educational platform.

The face to face and on-line user's support (students and professors) is provided by the Central Office of Informatics and Telecommunications (OCIT). The Help Desk service provides the user's name and password to students and professors. The Technical Support Administrator of Educational Platform Servers allows the student's and professor's access of face to face and on-line courses using the user's name and password. The User's 24/7 Support provides technical help to all on-line students of the graduate program of the School of Business and Entrepreneurship. The service is provided 24 hours for all 7 days of the week. The tests provided thru the Remote Proctor Now (RPNOW) tool are also configured.

## CENSUS

The Institution is not required by any state or regional accrediting agency to take attendance. Nevertheless, a census is made during the first weeks of each semester

determine whether the student attended at least once during the period of enrollment. This census is made for reporting requirements only.

Nevertheless, professors may take into consideration the student's attendance when grading and should explain the possible impact of absences on the student's final grade, if any. The student is also responsible for all material covered during the course, even if he misses classes during the semester. Thus, attendance is strongly recommended to better retain the student and facilitate achievement of his/her academic goals.

### GRADING SYSTEM

The Office of the Registrar distributes final grades after the end of each term. Students are graded according to the following system of letters and percentage values.

A	(90-100)	=	excellent
B	(80-89)	=	good
C	(70-79)	=	average
D	(60-69)	=	deficient
F	(0-59)	=	failure

- A – 4 grade points per credit hour
- B – 3 grade points per credit hour
- C – 2 grade points per credit hour
- D – 1 grade point per credit hour
- F – 0 grade points per credit hour

**In special cases the following grading system will be used:**

- W - Official withdrawal
- I - Incomplete Work
- IP - Incomplete, in progress
- P - Passing grade – Grades of P are not counted toward grade point average.
- NP - Failure
- NR - Not reported
- \* - Repeated course
- WA - Administrative withdrawal
- WF - Stop attending the course and have not submitted an official withdrawal
- WN - Non Attendance – enrolled but did not attend classes.
- AU – Audit course
- T – Transfer credit

### GRADE CHANGES

Students who believe that there is an error in one or more grades should notify the Office of the Registrar within the first thirty (30) calendar days of the beginning of the next session. Students who do not receive their grades at the end of any semester should immediately contact the Office of the Registrar.

An instructor may change a previously assigned grade by processing an official change of grade form in the Registrar's Office. The instructor must request the grade change form, cite the reason for changing the grade, and submit it to the school or program dean(s) for approval. All grade changes must be submitted to the Registrar's Office no later than the last day of class of the following semester.

### GRADE APPEALS

If the student feels that he or she has not been graded fairly, (s)he should first consult the professor. If this proves unsatisfactory, the student should then consult the dean of the school or program. If still unsatisfied, the student may consult the Vice Chancellor and submit an official grade appeal to the Registrar's Office. A committee hearing will be scheduled.

### INCOMPLETE "I" GRADE

The student will receive a provisional grade of INCOMPLETE only in the case of a justifiable absence from the final examination and if there are a minimum of three partial grades required in the course.

The opportunity to make up the examination or final project will be offered only to those students who have a chance of obtaining a minimum final grade of "D".

It will be the responsibility of the student in question to make the necessary arrangements with the professor or dean of the corresponding area to determine the final project and to change the INCOMPLETE.

The INCOMPLETE (I) status can be changed if the student completes the required work within the first thirty (30) days of the next academic session, in accordance with the established dates of the academic calendar.

The student who, due to the INCOMPLETE received in one or more courses, does not demonstrate academic progress will recuperate financial aid once the INCOMPLETE is removed in accordance with institutional norms, providing that this occurs within the deadline established by the federal government for assigning such aid has not elapsed.

For the purpose of evaluating a student's satisfactory academic progress at the end of the academic year, the (I) will be considered. After the removal of the Incomplete (I), he or she can appeal the institutional decision regarding academic standing.

### REPEATING COURSES

Students may repeat a course in order to improve their academic average. Credit will be given for the higher grade, which will be used to compute the grade point average. If the grade in the second attempt is the same as the first, only one will be used to calculate the cumulative average.

- a. Students who wish to repeat a course may do so. However, they **must** repeat all courses required for graduation where a D, F, W, or WF grade was obtained.
- b. The institution will allow students who earned a C, D, F, W or WF, WN in a course, to receive financial aid to repeat the course provided that 150% of the intended courses have not been exceeded.
- c. Students who repeat a course will receive the higher grade.
- d. If the grade obtained in a repeated course is the same as the previous grade, it will count for the cumulative average but will count only once for the graduation GPA.
- e. With respect to practicum courses, the student will have only two opportunities to repeat the course pending the recommendations and approval of the program dean and practicum supervisor.
- f. A student will not be able to repeat the course until a grade has been posted.

### WITHDRAWALS

Students wishing to officially withdraw from a course or from the institution must file an application with the Office of the Registrar within the period established in the academic calendar. A reduction in course workload may jeopardize the student's financial and/or veteran's benefits. The academic standing of the student will not be affected by partial or full withdrawals from the institution so long as the withdrawal is carried out before the end of the period specified by the institution for tuition refund eligibility. In the case of full withdrawal from the institution, the student will be considered not to have studied that semester.

Dropping courses or withdrawing from the institution after the end of the above-mentioned specific period will affect the academic standing of the student. The student will be classified in the category in which he or she falls at the end of the period for withdrawal eligible for refund of registration fees.

### CHANGES IN THE PROGRAM OF STUDIES

Students can apply for a reclassification in a program or major if they comply with the following:

1. Have an interview with the school dean
2. Apply for reclassification at the Office of the Registrar.

Students can apply for only one reclassification during a semester.

The enrolled credits and the cumulative average from student's previous program will be applied for the programs into which the students have been reclassified, for the purposes of the Satisfactory Academic Progress.

### STANDARDS FOR ACADEMIC PROGRESS

There are three categories of regular students according to their grade point average and number of courses completed: students with excellent achievement; students with satisfactory achievement; and students on probation. Students with a satisfactory academic progress are those with a grade point average equal to or higher than the established retention index and who satisfy the percentage of approved credit hours established by the academic norms.

At the end of each academic year, the Registrar will determine the grade point average (GPA) and the credit hours required of each student per academic year. This information will be measured against the established retention standards in order to determine the academic status of the student.

### INDEPENDENT STUDY

Independent studies courses will be offered as an alternative for students who require a course that is not programmed in their graduating year. These courses will be offered by independent studies if they meet the following specific criteria:

- Course content cannot be replaced by another.
- The course is not being offered in the modality in which the student is enrolled, and the student cannot take the course that is being offered by the other modality.
- Special cases will be considered individually on its own merits by the dean of the School.
- During his university life the student may take a maximum of three (3) courses. Any exceptions will be approved by the dean of school.

## **ACADEMIC PROBATION**

Students whose academic achievement is below the established retention index or who do not complete the percent of approved credit hours required according to regulations will be placed on academic probation for one (1) year. During this period the students will not be eligible for financial aid. The student request an appeal. The student's appeal will be reviewed by a committee. For students of Technical Programs, the probation period will be for one (1) semester.

Upon completion of the probation period, students must meet the required percentage of credit hours and grade point average as established by their academic degree program.

For percentage of credits required see Appendix.

## **ACADEMIC SUSPENSIONS**

Students will receive a one (1) year academic suspension if the cumulative academic index is lower than the retention index, or if they have not met the percentage of required credit hours upon completion of their probation period.

The University will not accept courses, diplomas or degrees earned by a student during the academic suspension period.

Students who wish to be readmitted upon completion of their academic suspension period must meet the current university readmission requirements.

Students who interrupt their studies or program during the probation period will still be considered on probation during the readmission process.

Readmitted students who have completed their one (1) year suspension period will be evaluated by the Admissions Committee of their academic program. Upon readmission, students will be placed on probation for a second period.

If a student does not meet the required retention index and the percentage of approved credit hours during the second probation period, he or she will be suspended academically for a maximum period of two (2) years.

The institution may suspend a student on recommendation of the Disciplinary Committee or the Vice Chancellor of Student Affairs, following the dispositions of the Student Regulations available in the Students' Rights and Responsibilities Manual.

Under extraordinary conditions, the Academic Suspension Appeals Committee may approve an additional probation period of one (1) year if a student is able to complete all the graduation requirements within that academic year.

## **APPEALS**

A student may appeal an institutional decision regarding satisfactory academic progress, if under extenuating or crisis circumstances he or she was not able to meet the requirements or conditions established by the University.

The University will consider the following crisis or extenuating circumstances to accept a student's appeal and to grant an exemption from the Academic Progress Policies: illness of the student or a relative, economic crisis due to illness affecting the a head of household, natural disasters, divorce, death in the immediate family, family problems, legal circumstances, and justified changes in academic objectives which cause an impact on the student's academic progress.

## **APPEALS COMMITTEE**

The Appeals Committee will be composed of one representative from each of the following offices: Dean of the School, Registrar, and Vice Chancellor for Student Affairs or designated representatives.

## **APPEALS APPLICATION**

Students who meet any of the academic progress appeals criteria must submit all the necessary documentation to justify their request.

If a student requests an appeal based on a mathematical or calculation error, and it is corrected by the Office of the Registrar, he or she will not go through the full Appeals process.

## **REINSTATEMENT OF FINANCIAL AID**

If a student's appeal is accepted by the Appeals Committee, he or she will be eligible to receive financial aid as long as he or she meets the federal financial aid deadlines and guidelines.

Appeals decisions are issued in writing by the Office of the Vice Chancellor for Student Affairs. This communication is issued by the Office of Financial Aid to reinstate a student's financial aid package.

If a student meets the conditions regarding his or her academic progress or those related to any academic sanction, he or she will be eligible to receive financial aid during the following enrollment period.

### **STUDENTS RIGHTS AND RESPONSIBILITIES**

A Students' Rights and Responsibilities Manual, available to all students, sets forth the rights of students, along with corresponding responsibilities. This document also addresses issues associated with the relationship between the student and the University. It provides information on protection in academic pursuit and privacy of records; sets forth all the conditions for responsible behavior on the campus; lists the various appeal and grievance procedures available to students; and includes a section on student discipline with control and discipline of college students. This document complies with relevant federal regulations such as the awarding of financial aid, protection of privacy of records, and equal access/equal opportunity. For more information visit the website at <http://ut.suagm.edu/sites/default/files/uploads/AsuntosEst/srtk/REGLAMENTO-ESTUDIANTE-2016.PDF> (Available only in Spanish).

### **FAMILY RIGHTS AND PRIVACY ACT INFORMATION STATEMENT**

Universidad Ana G. Méndez-Recinto de Gurabo has a longstanding commitment to protect students' rights and privacy of information. This commitment will continue as a matter of University practice. The University complies with the provisions of the federal Family Rights and Privacy Act. These federal and state requirements relate to accessibility and confidentiality, provide pertinent and detailed information concerning classification of student records, and access and release provisions.

University procedures are available to students, faculty, administration, and staff in the Office of the Vice Chancellor of Students Affairs, as well as in other offices and departments of the campus. In addition, the complete procedures are published in the Student Manual.

### **RELEASE OF STUDENT INFORMATION**

In accordance with, FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT (20 U.S.C. 1232g; 34CFR Part 99), students at Universidad Ana G. Méndez-Recinto de Gurabo have the right to inspect educational records and to correct such records as warranted. The institution protects students from release of information for inspection and review unless he or she waives this right. The parent(s) of U.S.C.S.s. 152 Internal Revenue Code also has the right to inspect records, which are maintained by the University on behalf on the student.

There are two distinct categories of records: (1) directory information records, and (2) limited access records.

1. Directory information, which may be made public, includes the student's name, last known address, telephone number, date and place of birth, major field of study, participation in officially recognized activities and sports, weight and height of members of athletic teams, dates of attendance, degrees and awards received, and the most recent previous educational agency or institution attended by the student. The office of the Vice Chancellor of Student Affairs will only release this information after the petitioner has demonstrated a legitimate need to have such information. Students who do not wish release of "directory information" must complete a statement in the Office of the Registrar no later than the last day of each term; otherwise, directory information may be disclosed by the University for legitimate purposes.
2. Limited access records pertain to the permanent academic records of the student, disciplinary records, financial information, and testing data. This category also includes all records maintained officially by the institution which do not come under the categories of directory information, or sole possession records. The institution will not release information in limited access records unless it has the written permission of the student or parent.

### **GRADUATION REQUIREMENTS**

Undergraduate students of Universidad Ana G. Méndez-Recinto de Gurabo will be eligible to receive academic degrees after meeting the following requirements and procedures:

1. Students must apply for graduation at the Registrar's Office during the period established in the academic calendar.
2. Completion of the courses required for the degree as set down by the institution.
3. Completion of the number of credit hours required for the degree with a minimum grade point average of 2.00 for most programs. For specific information about a particular academic program, must communicate with the School.
4. To compute the grade point average for graduation, only successfully completed courses which were requirements for the degree or certificate will be considered.
5. Transfer students must complete at Universidad Ana G. Méndez-Recinto de Gurabo at least the last thirty (30) credit hours of a bachelor's degree and the last twelve (12) credit hours of an associate degree. The student must complete the last twelve (12) credits of his/her major at Universidad Ana G. Méndez-Recinto de Gurabo.

Students must also settle any debts with the institution. No document certifying graduation will be given until documentation has been presented that there are no outstanding debts.

All students applying for readmission will be subject to the requirements for graduation in effect during the year they are readmitted.

Commencement exercises will be held once a year, at the end of the second academic semester. Students who meet graduation requirements at the end of any term or summer session may apply to the Office of the Registrar for a certification to that effect.

### GRADUATION WITH HONORS

Students are eligible for the following honor designations:

Cum Laude	Average of 3.50 to 3.69	Magna
Cum Laude	Average of 3.70 to 3.89	Summa
Cum Laude	Average of 3.90 to 4.00	

Transfer students may graduate with honors if they obtain a grade point average of 3.50 or higher in a minimum of 60 credits at Universidad Ana G. Méndez-Recinto de Gurabo.

### COURSE VALIDITY

Credits earned through courses taken at Universidad Ana G. Méndez-Recinto de Gurabo or at an accredited institution will be valid for a maximum of 7 years. After that period the credits will lapse.

### STUDENT SERVICES

Universidad Ana G. Méndez-Recinto de Gurabo improves and advances the student experience by streamlining its student services into one centralized location, the Integrated Student Services Center (CISE, from its Spanish acronym). The purpose of this Center is to provide competent professional assistance in two areas: (1) Enrollment management services and (2) Academic and personal support services. The Vice Chancellor of Student Affairs oversees the development and growth of these areas.

### ENROLLMENT MANAGEMENT SERVICES

The **Office of Marketing and Recruitment** recruits new students, transfers and readmissions. It disseminates information on UT academic offerings, strengths and services through various promotion and recruitment activities. It coordinates and offers orientation activities to recruit students undergraduate, graduate and doctoral programs by means of integrated campaigns. The Office develops year-round activities of recruitment with key personnel of the schools.

The **Admission Office** processes admission requests and admits students within the parameters established by each school. It also analyzes documentation and maintains communication with the student on the status of his/her request for admission. The Office coordinates the process and admission of prospective students for the different schools.

The **Financial Aid Office** offers financial aid orientation. It also analyzes documentation and assigns state, federal and institutional funds. Among others essential functions, it also administers and coordinates Title IV programs and processes the funds of proposals, athletic, administrative and honor scholarships.

The **Bursar** is responsible for applying the fee policies and administering the payment plans that guarantee institutional incomes. This officer notifies and monitors the compliance of the fiscal policy established by the Vice

Presidency of Financial Affairs, establishes the process of validation of registration, administers the application of federal funds refund policies and registers the private and public contracts of agencies. It also applies refund processes and the emission of checks to students, registers payments and maintains the collection system of the students' accounts.

The **Office of the Registrar**, in addition to handling student registration each term, provides various services for students. This office provides transcripts of students' academic records, verifies and certifies enrollment status, mails final grade reports, processes grade changes, orders and issues diplomas, processes changes in name, address, and telephone number.

### ACADEMIC AND PERSONAL SUPPORT SERVICES

These services are provided in a variety of forms and settings, including individual counseling and educational groups, workshops, seminars, formal classes, as well as the traditional one-on-one tutorial sessions. The Center's staff has been professionally trained and they are committed to helping students to make the most of their university experience. All services are provided on a strictly confidential basis, and respect the individuality of each student.

**Counseling Services** are available to students with educational, personal, and decision-making concerns. A wide variety of programs, workshops, counseling opportunities and informational materials are provided to help Turabo students meet the challenges of university programs and experiences. There are individual counseling and testing services for occupational and educational assessment. These services are offered by two units, each targeting different needs and special populations: (1) Quality of Life and Student Well-Being Services and (2) Student Development and Retention Services. These services are offered from 8:00 am to 8:00 pm, Monday through Thursday, 8:00 to 5:00 pm on Fridays and from 9:00 to 1:00 on Saturdays.

The **Quality of Life and Student Well-Being Office** designs, develops, and promotes an extensive system of programs, services and activities that facilitate the integration of multidisciplinary resources to create an atmosphere of respect, welfare and quality of life. The office promotes an ecological model of health, which encourages healthy life styles through activities related to awareness and education on topics such as violence prevention and the use of drugs, alcohol, and cigarettes. The Office encompasses, counseling and multidisciplinary services, a health services program, an education and prevention program (PREVEA), a community

connection program, volunteer projects and student organization support. It also serves as a resource center for Internship and practicum students.

In addition, this office coordinates the "Easy Access" Program, which offers special services for disabled students. These services include: parking, educational goal planning, tutoring and other student needs. The students should register with the program at the beginning of their admission process.

The **Student Development and Retention Services Office** is responsible for promoting the integration and adjustment of new students. It articulates the administration of diagnostic tests and carries out the academic orientation and counseling of first and second year students. The Office articulates projects for the improvement of the academic performance and retention in association with the schools and off-campus centers. Individual and group counseling services, tutoring, extra-curricular activities and peer support groups are offered to improve new students' adjustment processes to university life.

**Academic Development and Support Services** are available through two complementary programs of the Student Development and Retention Services Office. Their services are developed through funds awarded by the US Department of Education and by other institutional funds. The Complementary Educational Services Program and the Supplementary Instruction Program promote support services for students with academic difficulties through tutoring, mentorships and supplementary instructional activities.

**Career and Placement Services** are offered by the Office of the Assistant Vice Chancellor of Career and Placement. This office is responsible for satisfying the employment needs of students, alumni and community members and for improving their employment skills, increasing productivity and competences, thus bringing about the client's effective placement. The office functions as a "one-stop" career center and through diverse alliances with the government's Employment Center (Consortium Caguas-Guayama), integrated services are offered such as counseling, vocational testing, evaluation of employment skills, preparation of resumés and letters of presentation, referrals to governmental agencies and access to Puerto Rico's Department of Labor updated employment offerings through a technological laboratory of resources.

To assist students in career planning, a career reference library is provided with the center's printed, audio and videotape materials about specific occupations, skills, and requirements for jobs, educational and career matters. The

computerized occupational information system provides current educational, and labor market requirements, skills specification and other information to be used in the decision-making process. Consulting services for student, faculty, administration and community members are offered through this unit. An active job placement assistance program maintains continuous communication with employers. A computer database of prospective employers is in use. Students may register for part-time and full-time jobs or seasonal employment while pursuing their academic programs. Vocational counseling services are also offered to high school students from nearby communities.

The services are sponsored by institutional funds and with funds from two federal proposals: Hispanic-Serving Institutions Assisting Communities (HSIAC) Program and AmeriCorps Vista.

The **Scholarship and Internship Program** provides the opportunity for active students to request special scholarships and permits students to participate in academic-professional and research opportunities in different companies and educational institutions globally. The activities promoted by this office complement the student's academic development and allow the development of professional abilities and personal skills to be integrated successfully in the work force. It also assists talented high school students in completing their university studies in the SUAGM. This program is funded by corporate, private, public, and institutional funds.

### HEALTH SERVICES

Services are located in the CISE building. The health services staff consists of a part-time physician and a registered nurse. Their primary purpose is to provide students with emergency and ambulatory services. The student health services stress the concept of well-being and preventive medicine. Health education and counseling are available as well as treatment for medical problems. The staff is on duty Monday through Thursday from 8:00 a.m. to 8:30 p.m., Friday from 8:00 a.m. to 5:00 p.m. and Saturday from 8:00 a.m. – 12:00 p.m., and is available for emergencies, first aid, referral sources and medical counseling. Basic medical care is provided, but students are ultimately responsible for making arrangements for their own complete health care.

### ARMY, AIR FORCE (ROTC)

A formal agreement has been established between Universidad Ana G. Méndez-Recinto de Gurabo and

University of Puerto Rico for cross-enrollment of students in the Army Reserve Officers Training Corps (ROTC) and the Air Force Training Corps.

Students from Universidad Ana G. Méndez-Recinto de Gurabo are authorized to enroll and attend classes in the ROTC Program at the University of Puerto Rico. Those courses will be considered as Universidad Ana G. Méndez-Recinto de Gurabo resident courses. Credit will be granted and students will be entered in the official academic record.

Students will not be charged for courses taken in the ROTC Program. The United States Army and Air force through the University of Puerto Rico will provide ROTC textbooks, military type equipment, uniforms and military training. Students will have equal opportunity to compete for two and three year scholarships on a nationally competitive basis.

Semester credit hours for ROTC course are as follow (Military Science-MS)

MSI 2 credit hours (Fall Semester)  
(1 hour classroom; 1 hour Leadership Lab)

MSI 2 credit hours (Spring Semester)  
(1 hour classroom; 1 hour Leadership Lab)

MSII 3 credit hours (Fall Semester)  
(2 hours classroom; 1 hour Leadership Lab)

MSII 3 credit hours (Spring Semester)  
(2 hours classroom; 1 hour Leadership Lab)

MSIII 4 credit hours (Fall Semester)  
(3 hours classroom; 1 hour Leadership Lab)

MSIII 4 credit hours (Spring Semester)  
(3 hours classroom; 1 hour Leadership Lab)

MSIV 4 credit hours (Fall Semester)  
(3 hours classroom; 1 hour Leadership Lab)

MS 400-01 3 credit hours (Advanced Camp, Fort Riley, Kansas)

MS 300-01 2 credit hours (Basic Camp, Fort Knox, Kentucky)

AS 100 2 credit hours (Fall & Spring)  
(1 hour classroom; 1 hour Semester Leadership Lab)

AS 200 2 credit hours (Fall & Spring)  
(1 hour classroom; 1 hour Semester Leadership Lab)

AS 300 4 credit hours (Fall & Spring)  
(3 hours classroom; 1 hour Semester Leadership Lab)

AS 400 4 credit hours (Fall & Spring)  
(3 hours classroom; 1 hour Semester Leadership Lab)|

### **SERVICES FOR DISABLED STUDENTS**

Federal and state regulations guarantee disabled students equal opportunity in post-secondary education. The university has created special support services to assist disabled students. These services include, but are not limited to, assistance in registration, counseling, financial aid, readers for the blind, interpreters for the deaf, class notes, as well as individualized classes and/or tutoring. Transportation services are available through a special partnership between Universidad Ana G. Méndez-Recinto de Gurabo and the government's Department of Vocational Rehabilitation. Services are coordinated in the Quality of Life and Student Well-Being Office.

### **AUTOMOBILES ON CAMPUS**

The security director enforces traffic and parking regulations on and around campus. The parking system consists of express lanes with proximity readers (AVI electronic seal). In addition, in each entrance and exit station, ticket machines are installed to facilitate access to visitors.

### **DINING SERVICES**

The Student Dining Service provides a variety of options for students who wish to dine on-campus. The cafeteria offers breakfast, lunch and dinner, Monday through Saturday. Hot meals and fast food are available. Vending machines for snacks and refreshments are also located throughout the campus.

### **STUDENT ACTIVITIES**

A combination of both extra-curricular and co-curricular activities is available on campus providing all opportunities for all students to enhance their educational experience. The Office of Cultural and Social Activities is responsible for the diffusion and promotion of artistic events for the enjoyment and enrichment of the university community according to its needs and interests. Each year through the establishment of a visiting artists series, outstanding musicians, singers, artists, dancers, lecturers and other performers share their talents and

expertise with students. In addition to on-campus art exhibits, the academic schools present dance programs, musical concerts, athletic competitions, and theatrical productions.

### **STUDENT GOVERNMENT**

Through student governing bodies, students have an opportunity for self-government and to participate with the faculty and administration in formulating appropriate policies. Student Council members are elected by secret vote by the members of the Student Government Assembly. The Council meets once a month. Students are represented in the institution's governing bodies through this Council. Opinions and recommendations are presented to the Vice Chancellor of Students Affairs. Its members participate in academic, discipline, sports, and cultural activities committees.

### **STUDENT PUBLICATIONS**

The institutional newspaper *El Taíno* is published by students of the communication program. It serves as a medium for institutional activities and as a practicum experience for the students.

### **STUDENT ORGANIZATIONS**

According to their interests, students may join religious, social service, academic, professional, and honorary groups. A fair is held at the beginning of each term to help new students get acquainted with and select the group or groups that interest them. All students are encouraged to participate actively in clubs and organizations.

### **UNIVERSIDAD ANA G. MÉNDEZ-RECINTO DE GURABO CHOIR**

The Universidad Ana G. Méndez-Recinto de Gurabo choir offers students the opportunity to cultivate their musical abilities and talents and enables them to represent the University in activities on and off campus.

### **THEATER WORKSHOP**

The theater workshop provides students with the opportunity to develop their abilities in the performing arts. The workshop organizes and produces one play per semester for the enjoyment of the university community and the community at large.

### **ATHLETIC AND INTRAMURAL PROGRAMS**

Athletic and Intramural Programs within the Department of Physical Education, of the School of Education play an important role in the educational process of Universidad Ana G. Méndez-Recinto de Gurabo. The programs offer a wide range of recreational and intercollegiate competitive sports for all eligible students. Both individual and team sports have brought the university and individuals national recognition. An outstanding staff of administrators, coaches, and expert trainers work in unison to make the campus athletic programs for men and women a first-class endeavor. The university boasts 28 men's and women's varsity teams, which have won 240 champion and subchampionships since 1975. These triumphs include the record-setting achievement of winning male and female Intercollegiate Athletic League track and field championship 24 times since 1987. Universidad Ana G. Méndez-Recinto de Gurabo athletes have also been champions in basketball, weight lifting, decathlon, heptathlon, volleyball, beach volleyball, tennis, table tennis, swimming and relays. Each year, the intramural program allows participation of more than 7,000 active and passive students and faculty members. The teams are called the "Tainos" with their orange, black, and white colors. The sports facilities include indoor basketball and volleyball courts, tennis courts, free weight and Cybex machines gym, a 400-meter track, swimming pool, a baseball park, jogging trail and wellness center.

### **VETERAN'S SERVICES**

The Veterans' Services Office, located in the Registrar's Office, is primarily concerned with the motivation of veterans and their dependents to effectively exercise their right to an education.

Veterans are assisted in the completion and processing of required documents for the purpose of establishing eligibility, certification of services and academic progress. These services are offered in close coordination with the Veterans Administration Office of Puerto Rico.

Veterans and their beneficiaries must complete their program of studies within the time established by their

curriculum. Students who extend their studies beyond the time established by the program cannot continue to receive veterans' benefits. If the student is a recipient of the Pell Grant, he may resort to the 150% additional time established by the institutional standard for Satisfactory Academic Progress. Veterans will be evaluated utilizing both veterans' benefits and Pell Grant criteria, if they are beneficiaries of these.

Veterans Administration Office will not pay courses in order to raise GPA. It will only pay failed courses (F, NP-Failure) or those that requires a minimum approval grade. Veteran's Administration Office will reduce benefits to the students as of the last day of attendance to class.

### **VICE CHANCELLORSHIP OF INFORMATION RESOURCES INFORMATION RESOURCES**

The Vice-Chancellorship of Information Resources (VCIR) is the primary information center for the UT main campus and additional locations. It provides students, professors, staff, and the external community services and resources that are aligned with the institutional priorities, goals and strategic plan. The VCIR is organized into four main structures: the Library, Archives, Information Technology and Informatics and Telecommunications units.

Library services, archives, collections, and technology resources play a crucial role in the support of the institution's mission for teaching, learning, research, and information literacy through guided independent instruction on the web and direct group instruction. During the past ten years, the VCIR has provided a place for both the physical and the Virtual Library.

### **LIBRARY**

The Library administers collection development activities (acquires and catalogs materials) for its main campus and Additional Location libraries. The Library has support from the Coordinator for Automated Systems to administer and update the Online Public Access Catalog (Voyager) and the Virtual Library. The VCIR offers a remarkable collection of print, audiovisual materials, and electronic resources and a vigorous information literacy program conducted through guided independent instruction via the web and direct group instruction.

The UT Library offers intra-library loans within the two other SUAGM universities and has interlibrary loan agreements with other universities in Puerto Rico and the United States.

Library instruction has always been an important service provided at the UT Library. Notwithstanding, the level of commitment and resources for a well-designed program of user instruction has varied over time. The Library is proactive in considering and foreseeing the future needs for equipment, resources, services, and technologies relevant to the varying needs of a modern student population. Library assessment is continual and ongoing. The goal is to assess the use of library resources, satisfaction with technologies and services, and to integrate results to enhance user satisfaction and learning experiences with library services and resources.

## COLLECTIONS

The Library develops its collections according to the priorities of the programs to fulfill the information needs of its users. It actively seeks recommendations from faculty and administrators for the acquisition and development of library resources and services.

The library's collections include print, audiovisual materials, and electronic resources. There are books, electronic books, newspapers, maps, indexes, journals, periodicals, databases, and audiovisual materials. There is a special books' collection that was donated by the notable scholar Dr. Arcadio Díaz Quiñones in 1998. The Arcadio Díaz Quiñones print collection consists of approximately 2,709 volumes on the subjects of art, history, and literature. The Library also has special collections donated by Luis Trelles (Puerto Rican film critic), Mario Gaztambide, Dr. Albert O. Hirschman, Juan Manuel García Passalacqua (3,887), Dr. Ivonne Acosta Lespier, Edgardo Rodríguez Juliá (759), José Luis González (10,542), Francisco Manrique Cabrera (4,433) and a music collection of operas (1,547) donated by Antonio Monroig.

The information resources in the Library at Universidad Ana G. Méndez-Recinto de Gurabo are a combination of a healthy print collection (119,569 volumes) and an electronic collection (composed of newer information technologies). Both the print and electronic collections have responded to changes undergone in the institution from being solely a teaching to a teaching and research institution. During the past ten years, the Library has experienced demand growth in areas such as e-books (3,061,784) and e-journals (29,180). This augmentation in requests for electronic resources has been combined with user needs for research tools such as Refworks and searching technologies provided by applications from Exlibris (Voyager and Primo) and Ebsco Discovery. While the collections have been expanding, the planning, design and implementation of library services has concentrated on developing their advanced use in the

academic community through an aggressive information literacy program which is part of the Freshmen Seminar that provides literacy information support to faculty, students, courses and programs to improve teaching, research and learning.

## ARCHIVES

The *Biblioteca Museo Gobernador Pedro Rosselló* (BMGPR) was created as a result of Law 290 signed in 2000 by the Commonwealth of Puerto Rico, which allows all former governors of the island to designate a non-profit or educational institution as a depository of historical materials (documents, photographs, media files, and memorabilia) of their years in office, to safeguard and make accessible to the public for reference and study.

## INFORMATICS AND TELECOMMUNICATIONS

The Informatics and Telecommunications unit, which is part of the VCIR, provides telecommunications and computer resources support (computer labs and network) to the academic community (students, professors, staff, and general public). Given that the Informatics and Telecommunication unit is interconnected to the Central Office of Information and Telecommunications (OCIT according to its Spanish acronym), located at the SUAGM headquarters, guarantees that any technology-driven project that impacts SUAGM is effectively managed by both units. The modern telecommunications infrastructure and hi-tech staff guarantees a constant assessment, evaluation, and modernization of both the technological needs of the Physical Library and Virtual Library. The Informatics and Telecommunications unit maintains a link with the Schools to help provide up-to-date computers and technologies throughout the institution to offer excellent technologies and ample facilities that meet the needs of UT users.

During the past ten years, the VCIR has improved its library resources and services. A substantial expansion of the Virtual Library's e-books holdings has been completed to house more than three (3) million in the collection. The ebook collection includes among other outstanding databases: Safari Tech Books Online, Springer Engineering Books, E-Libros (Spanish online books in multidisciplinary topics), and Compustat.

## MUSEUM AND CENTER FOR HUMANISTICS STUDIES DRA. JOSEFINA CAMACHO DE LA NUEZ

The Museo y Centro de Estudios Humanísticos Dra. Josefina Camacho de la Nuez of the Universidad Ana G. Méndez Recinto de Gurabo has been a museum and center for the study of the humanities at the Universidad Ana G. Méndez Recinto de Gurabo since 1980's. Its mission is to collect, preserve, study, and disseminate the artistic and humanistic expressions of the regional and national Puerto Rican culture for the enjoyment and benefit of the university community and the general public. The museum started in one of the wooden historic buildings on campus of the sugar cane plantation Santa Juana. The Museum has a permanent collection of 3,000 objects. It has recently inaugurated a new 25,000 sq. ft. state of the facilities with galleries dedicated to the Archaeology of Punta Canelero, Puerto Rican Folk Arts, Puerto Rican Poster Collection, the History of the Central Oriental Region, Colonial Paintings from Latin America of the Lola and Antonio Roig collection, the Ana G. Méndez historical collection and a rotating exhibition space. It also has an Education Learning Center, the Walter Murray Chiesa Folk Art Archives, a 209-seat auditorium, an interior sculpture garden, a museum store and a café.

### **EVENING AND SATURDAY PROGRAM**

Students may enroll in the regular academic programs offered by the Evening and Saturday Program. The evening division operates Monday through Thursday from 10:00 a.m. to 9:00 p.m., from 8:00 a.m. to 6:00 p.m. on Friday, and from 7:00 a.m. to 3:00 p.m. on Saturday.

### **SCHOOL OF PROFESSIONAL STUDIES AND CONTINUING EDUCATION (AHORA PROGRAM)**

The mission of the AHORA Program of the School of Professional Studies is to provide an accelerated educational process to adult students. The program differs from traditional methods of instruction in that the professional experience of participants is incorporated into the classroom to create an interactive, challenging and dynamic environment. Faculty members have professional experience and have been specially prepared to work with adults as innovative educational facilitators. AHORA is designed exclusively for the adult student; it offers a professional environment, as well as integrated, personalized and individualized services. To fulfill this mission, the School of Professional Studies intends to:

- Promote adults to value continuous learning and increase their contribution to the world of employment
- Facilitate adult students in attaining their educational goals

- Create a learning community that facilitates building new knowledge which is based on and is applicable to the professional and personal reality of adults
- Provide integrated student services of quality and easy accessibility to adult students
- Recruit and develop staff who know and are able to meet the needs of the adult students effectively.
- Integrate technology into the academic, service and administrative processes
- Develop academic offerings that respond to the present needs of the professional and business world
- Establish a continuous process of feedback and assessment of all the processes and services.

**Description of the Accelerated Program of Studies** The AHORA Program is accelerated because all of its courses are offered in five or eight week sessions. During each session, classes meet once a week for four hours. The accelerated methodology is based on a learning process shared between the professor and the student. Each student receives a module which serves as a study guide and indicates the assignments and activities that must be completed to prepare for class. Our faculty is specially selected and trained to work with adult students through the accelerated mode, facilitating a class environment where learning is built on experiences and the assignments performed by the students. This model of accelerated studies can be applied to the different academic programs of the institution, to new academic programs or any other academic program where adult students participate. The courses are offered evenings and Saturdays (morning and afternoon). The student may take a maximum of two classes per session, completing six credits every five or eight weeks. Registration is continuous, with courses beginning fourteen times a year, and the possibility of completing up to fifty-four credits in an academic year. This way, the program provides greater flexibility for students, since they can accelerate their academic progress or design a class program that conforms to the different commitments they may have during the year.

### **Admission Requirements**

To fulfill its mission and goals, the AHORA Program admits only adult students with academic and professional experience that meet the following requirements:

- 21 years of age or older
- 2 years of work experience
- 12 credits of academic work at the postsecondary level

### **CONTINUING EDUCATION**

The Continuing Education Program endeavors to strengthen social structure and to foster and develop academic programs according to the educational needs of the individual. These programs do not necessarily function under traditional academic rules, and their intention is to:

1. Update the student's knowledge.
2. Supply educational opportunities for personal growth to people from a variety of educational backgrounds, thus satisfying certain social, personal or occupational needs.
3. Implement professional training, both on-campus and in-house, to enhance the occupational advancement and personal development of personnel in the public and private sectors.
4. Promote community activities that explore and seek solutions to social, political, and economic problems.
5. Organize service programs for people who want to enrich their leisure time.

The program designs seminars, continuing education courses, conferences and life enrichment courses. Industries, government agencies, community institutions and the community in general benefit from this program.

### OFF-CAMPUS CENTERS

Universidad Ana G. Méndez-Recinto de Gurabo currently operates five (5) additional locations located in Barceloneta, Cayey, Isabela, Ponce, and Yabucoa. Each additional locations deliver the same curriculum that is offered at the UT main campus.

Contact information is included below.

#### BARCELONETA

Ramón Díaz, Director / [rdiaz@suagm.edu](mailto:rdiaz@suagm.edu)

##### Postal Address

PO Box 2194, Barceloneta, PR 00617

##### Physical Address

Carr. PR 2 Km. 59.0  
Sector Tiburón, Barceloneta, PR 00617

Phone: (787) 787-846-1777

Fax: (787) 846-1778

#### CAYEY

Maricelli Zaragoza, Director / [ue\\_mzaragoza@suagm.edu](mailto:ue_mzaragoza@suagm.edu)

##### Postal Address

PO Box 9000, Suite 281, Cayey, PR 00737

##### Physical Address

Edificio Plaza Empresarial, primer y tercer piso  
20 Ave. Antonio R. Barceló, Suite 107B Cayey, Puerto Rico

Phone: (787) 263-2177

Fax: (787) 263-0277

#### ISABELA

Luis A. Ruíz Vargas, Director / [um\\_lruiz@suagm.edu](mailto:um_lruiz@suagm.edu)

##### Postal Address

7349 Ave. Agustín Ramos Calero, Isabela, PR 00662

##### Physical Address

Carr. PR 12, Km. 27.3,  
Bo. Mora, Zona Industrial, Isabela  
Phone: (787) 830-4160 / 5050/ 5055  
Fax: (787) 830-5070

#### PONCE

Irma Del Pilar Cruz, Director / [um\\_idelpilar@suagm.edu](mailto:um_idelpilar@suagm.edu)

##### Postal Address

PO Box 740, Mercedita, PR 00715

##### Physical Address

Carr. PR 14 Km. 3.4  
Bo. Machuelo, Ponce, 00717

Phone: (787) 812-5001

Fax: (787) 812-5002

**YABUCOA**Jessie Hernández, Director / [jehernandez@suagm.edu](mailto:jehernandez@suagm.edu)**Postal Address**

PO Box 25, Yabucoa, Puerto Rico 00767

**Physical Address**

Carr. PR 901, Km.1.4

Bo. Juan Martín, Yabucoa, 00767

Phone: (787) 893-6065, 266-0255/2066

Fax: (787) 266-0250

**PRINCIPAL CAMPUS**David Méndez, Chancellor / [edmendez@suagm.edu](mailto:edmendez@suagm.edu)**Postal Address**

PO Box 3030, Gurabo, Puerto Rico 00778-3030

**Physical Address**

State Road 189, Km.3.3

Gurabo, Puerto Rico

Phone: (787) 743-7979

Fax: (787) 744-5394

**ACADEMIC OFFERINGS 2019-2020****Undergraduate Programs**

Programs	Gurabo	Off-Campus locations				
		Barceloneta	Cayey	Isabela	Ponce	Yabucoa
<b>Business and Entrepreneurship</b>						
<b>Associate Degrees</b>						
Accounting	x		x			x
Computer Information Systems	x		x			x
Management	x		x			x
Sales and Marketing	x					
<b>Bachelor's Degrees</b>						
Accounting	x		x	x	x	x
Computer Information Systems	x		x	x	x	x
Management	x		x	x	x	x
Marketing	x					
Office Technology Management	x					x
<b>Education</b>						
<b>Associate Degrees</b>						
Infants and Toddlers	x					
Personal Training	x				x	
Sign Language Interpretation	x					

Sports Training	x				x	
<b>Bachelor's Degrees</b>						
Elementary Education: English	x					x
Elementary Education: Preschool	x			x		
Elementary Education: Primary K-3	x					
Physical Education K-12	x					
Recreation	x					
Secondary Education: Biology	x					
Secondary Education: Chemistry	x					
Secondary Education: General Science	x					
Secondary Education: History	x					
Secondary Education: Mathematics	x					
Secondary Education: English	x					
Secondary Education: Vocational Industrial	x			x		
Special Education K-12	x					
<b>Professional Certificate</b>						
Sign Language Interpretation	x					
<b>Engineering</b>						
<b>Associate Degrees</b>						
Electronic Engineering Technology	x					
Computer Technology & Networks	x					
Electric Engineering Tech & Renewable Energy	x	x				
Mechanical Engineering Technology	x	x				
Quality Control Engineering Technology	x					
<b>Bachelor's Degrees</b>						
Civil Engineering	x					
Computer Engineering	x					
Electrical Engineering	x					

Industrial and Management Engineering	x					
Mechanical Engineering	x					
<b>Health Sciences</b>						
<b>Associate Degrees</b>						
Nursing	x		x	x	x	x
Veterinary Technology	x	x			x	x <sup>1</sup>
<b>Bachelor's Degrees</b>						
Food and Nutrition Management	x					
Veterinary Technology	x					
Nursing Sciences	x		x		x	x

Programs	Gurabo	Off-Campus locations				
		Barceloneta	Cayey	Isabela	Ponce	Yabucoa
Nutrition and Dietetics	x					
Nutrition Sciences	x					
Speech-Language Therapy	x	x		x	x	x
<b>International School of Design and Architecture</b>						
<b>Associate Degrees</b>						
Architectural Drafting	x					
Fashion Design	x	x				
Web Design	x	x				
<b>Bachelor's Degrees</b>						
Graphic Design	x	x				
Fashion Design	x	x				
Industrial Design	x					
Interior Design	x					
Landscape Architecture	x					
<b>Liberal Arts and General Education</b>						
<b>Associate Degrees</b>						
Interdisciplinary Studies	x					
<b>Natural Sciences and Technology</b>						
<b>Associate Degrees</b>						
Biopharmaceutical Technology	x	x				
Food Technology and Safety	x					

<b>Bachelor's Degrees</b>						
Biology	x	x				
Biotechnology	x					
Chemistry	x					
Food Technology and Safety (Ingegrated BS/MS)	x					
General Sciences	x					
Medical Technology	x	x <sup>2</sup>				
<b>Professional Certificate</b>						
Medical Technology	x					
<b>Social Sciences and Communications</b>						
<b>Associate Degrees</b>						
Cinematography and Photographic Direction	x					
Forensic Investigation	x	x				
General Social Sciences	x					
<b>Bachelor's Degrees</b>						
Communications	x					
Criminology	x		x	x	x	x
Film, Video and Multimedia	x					
Social Sciences General Program	x		x			x
Psychology	x					x <sup>3</sup>
Digital Journalism	x					
Public Relations and Advertising	x					
Social Work	x		x		x	x
Socio-Humanistic Studies	x					
<b>Professional Studies<sup>3</sup></b>						
<b>Bachelor's Degrees</b>						
Health Services Management	x		x		x	
Human Resources Management	x		x	x	x	x
<b>Public Security Institute</b>						
<b>Associate Degrees</b>						
Emergency Management & Disaster Recovery	x					
Public Safety	x		x	x	x	x
<b>Bachelor's Degrees</b>						
Penal Justice: Security Protection	x		x	x	x	x
<b>Technical Studies</b>						
<b>Associate Degrees</b>						
Clinical Therapeutic Massage	x					

Programs	Gurabo	Off-Campus locations				
		Barceloneta	Cayey	Isabela	Ponce	Yabucoa
Office Systems with Medical Billing	x		x		x	
Pharmacy Technician	x		x	x	x	x
Preschool Education Teacher Assistant	x					
Respiratory Therapy	x			x	x	x

<sup>1</sup>Second year must be completed at Main Campus    <sup>2</sup>First two years    <sup>3</sup>Accelerated program

# SCHOOL OF LIBERAL ARTS AND GENERAL EDUCATION

## SCHOOL OF LIBERAL ARTS AND GENERAL EDUCATION

The Office of the Deanship of General Education was created in February 2012 to address particular needs of new students admitted to the University. In addition to offering first-year and second-year courses in the General Education Component (GEC), the Deanship of General Education provides an array of support services to students in their first and second year. Additionally, advanced undergraduate courses in English, Spanish, and History are offered as a service to Education majors or those interested in pursuing further study in those areas. In August 2017, the Deanship became the School of Liberal Arts and General Education. It continues working closely with all the schools and offices of the university to promote the success of all students.

## MISSION

The mission of the School of Liberal Arts and General Education (SLAGE) of the Universidad Ana G. Méndez-Recinto de Gurabo is to provide students with fundamental intellectual and critical thinking skills to ensure that students are equipped to be responsible members of a global and technological society

In such, the SLAGE aims to prepare students with the necessary skills in oral and written communication, knowledge of global and historical issues, mathematic and scientific reasoning, technological competencies, and biological and social aspects of humans.

## VISION

The vision of SLAGE is to provide students with a breadth of knowledge and experiences to think and reason across disciplines so that they are successful both inside and outside the academic world.

## LEARNING OUTCOMES

The School of Liberal Arts and General Education aims to develop the following knowledge, skills, and attitudes in all students:

1. Identify and understand global issues from the social, economic and political perspectives
2. Comprehend the biological, behavioral and social aspects of human beings
3. Analyze the importance of historical and current world events
4. Understand and explain the multi-disciplinary nature of learning and problem solving
5. Explain the relationship and contribution of the arts and the humanities in the development of society
6. Apply ethical values and principles as a responsible citizen
7. Recognize the importance of the conservation of nature and the environment
8. Respect human rights, tolerance, diversity, and individual and cultural differences
9. Develop and apply critical thinking skills to solve problems
10. Communicate effectively in oral and written Spanish and functionally as English language learners
11. Develop and apply mathematical, reasoning skills and scientific inquiry methods
12. Achieve basic literacy in technology

## FACULTY

**Beatriz Cruz Sotomayor** / Associate Professor  
PhD, Universidad de Puerto Rico

**Carmen Mercado Villafañe** / Associate Professor  
MA, Universidad Interamericana de Puerto Rico

**Carmen Y. Rosado Sánchez** / Instructor  
MA Universidad de Puerto Rico

**Cristóbal E. Santiago Berríos** / Instructor  
JD, Universidad Interamericana de Puerto Rico

**Daniel Tapia Santiago** / Assistant Professor  
PhD, University of Illinois at Urban-Champaign

**Doris Rivera Benitez** / Associate Professor  
MA, Universidad de Puerto Rico

**Edwin Calderón Santana** / Assistant Professor  
EdD, Nova Southeastern University

**Evelyn Martínez Sanabria** / Professor  
EdD, Universidad del Turabo

**Evelyn Pérez Mass** / Assistant Professor  
EdD, Universidad Interamericana de Puerto Rico

**Félix R. Huertas González** / Professor  
PhD, Centro de Estudios Avanzados de Puerto Rico y el  
Caribe

**Gloria Maldonado-Pérez** / Professor  
MA, Universidad de Puerto Rico

**Hiram Marrero Rosario** / Instructor  
JD, City University of New York

**Ileana Canetti Mirabal** / Associate Professor  
MA, New York University

**Javier Alemán Iglesias** / Assistant Professor  
PhD, Universidad Interamericana de Puerto Rico

**Jennet Rodríguez Betancourt** / Professor  
PhD, Centro de Estudios Avanzados de Puerto Rico y el Caribe

**José Calderón Rivera** / Assistant Professor  
PhD, Centro de Estudios Avanzados de Puerto Rico y el Caribe

**José M. Castro de León** / Professor  
MA Ed, Universidad de Puerto Rico

**José Orlando Sued** / Assistant Profesor  
PhD, Centro de Estudios Avanzados de Puerto Rico y el Caribe

**José R. Gómez Blanco** / Assistant Professor  
PhD Centro de Estudios Avanzados de Puerto Rico y el Caribe

**Juan E. Roque Rivera** / Assistant Professor  
PhD, Universidad de Puerto Rico

**Juanita Rodríguez Betancourt** / Professor  
PhD, Centro de Estudios Avanzados de Puerto Rico y el Caribe

**Judith Soto Ledesma** / Associate Professor  
MA, Universidad de Puerto Rico

**Julio Vélez Ortiz** / Assistant Professor  
PhD, Centro de Estudios Avanzados de Puerto Rico y el Caribe

**Liza M. Pérez Sánchez** / Assistant Professor  
PhD, Centro de Estudios Avanzados de Puerto Rico y el Caribe

**Lorna Polo Alvarado** / Associate Professor

PhD, Universidad de Puerto Rico

**Lourdes Encarnación Conde** / Assistant Professor EdD,  
Universidad Interamericana de Puerto Rico

**Luz N. Lebrón Delgado** / Assistant Professor  
PhD, Centro de Estudios Avanzados de Puerto Rico y el Caribe

**Maia Sherwood Droz** / Assistant Professor  
PhD, Universidad Complutense de Madrid

**M. Elinor Medina Callarotti** / Associate Professor  
MEd, Harvard University

**Philip R. Murray Finely** / Assistant Professor  
EdD, Universidad del Turabo

**Rafael Pabellón Rivera** / Professor  
MEd, Universidad de Puerto Rico

**René Rodríguez Ramírez** / Associate Professor  
PhD, Rutgers University

**Sandra Pulliza Polo** / Professor  
EdD, Universidad Interamericana de Puerto Rico

**Sylvia M. Casillas Olivieri** / Instructor  
MA, San Francisco State University

**Zoran Vujisic-Jovovic** / Assistant Professor  
PhD, Rhodes University

## PROGRAMS OF STUDY

### ASSOCIATE DEGREE IN INTERDISCIPLINARY STUDIES

The associate degree in Interdisciplinary Studies is designed for students who want to receive an education in liberal arts with one area of focus, or a study of their own interest. The interdisciplinary focus of the program develops the skills, knowledge, and attitudes of critical thinking and problem solving, ethics, and cultural sensibility. All of these are necessary in today's society and employment ventures. Additionally, credits earned in the associate degree are transferable to the bachelor's degree in various fields of study.

<b>Total Credits</b>	<b>57</b>
<b>General Education Courses</b>	<b>33</b>
<b>Electives Courses</b>	<b>24</b>

#### General Education Courses (33 credits)

ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
FSGE 105	Freshman Seminar	3
HIST 253	History of Puerto Rico	3
HUMA 111	Civilizations and Universal Culture I	3
MATH 120*	Introductory Algebra or 3 MATH 121*	3
	Intermediate Algebra 3 MATH 121L* Intermediate Algebra Lab	3
SOSC 111	Individual, Community, Government and Social Responsibility I	3
SOSC 112	Individual, Community, Social and Ethical Responsibility II	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
LAGE 110	Introduction to Personal Development	3

#### Elective Courses (24 credits)

##### Select one discipline

##### Education

EDUC 106	Introduction to Education	3
EDUC 171	Human Growth and Development	3
EDUC 172	Educational Psychology	3
EDUC 205	Sociological Foundations of Education	3
PHED 210	Health, Hygiene and Nutrition	3
EDUC 214	Computers in Education	3
Free elective		6

##### Business and Entrepreneurship

ACCO 111	Introduction to Accounting I	3
----------	------------------------------	---

MARK 133	Principles of Marketing	3
COIS 201	Data Processing	3
FINA 202	Business Finance	3
MANA 204	Business Law and Entrepreneurial	3
INBU 350	International Business	3
Fee elective		6

#### STEM (24 credits)

MATH 151	Pre-Calculus I	4
MATH 151L	Pre-Calculus I	0
MATH 152	Pre-Calculus II	4
MATH 152L	Pre-Calculus IJ Lab	0
CHEM 203	General Chemistry I	4
CHEM 203L	General Chemistry I Lab	0
MATH 221	Calculus I	4
MATH 221L	Calculus I Lab	0
PHSC 203	General Physics I or Elective Course	4
PHS 203L	General Physics I Lab	0
Free Elective		4

\*\*MATH 120 is required for Education and Business and Entrepreneurship, MATH 121 y MATH 121L required for STEM

## COURSE DESCRIPTIONS

(Courses marked with @ could be offered in both modalities, traditional or online.)

### **ART 101**

#### **Art Appreciation**

##### **Three Credits**

The course discusses the basic principles of painting, sculpture, and architecture, with emphasis on painting. It centers on the element necessary to judge a work of art. The content includes the different techniques for creating works of art.

### **ART 121**

#### **Drawing I**

##### **Three Credits**

The course covers basic principles of drawing. It includes training in the different media of graphic expression, along with exercises in structure, proportion, light and shadow, rhythm, balance, and the basic concepts of perspective.

### **ART 122**

#### **Drawing II**

##### **Three Credits**

The course is a continuation of ART 121, and develops more advanced principles of drawing. It includes further development in the different media of graphic expression, along with exercises in structure, proportion, light and shadow, rhythm, balance, and the basic concepts of perspective.

### **ART 201**

#### **Theater Arts I**

##### **Three Credits**

The course centers on drama from a historical perspective, and includes an introduction to the theater arts. Students may be assigned to participate in small-scale productions.

### **ART 202**

#### **Theater Arts II**

##### **Three Credits**

The course is a continuation of ART 201, and develops more advanced topics in theater arts. It includes further exploration of drama from a historical perspective, and includes an introduction to the theater arts. Students may be assigned to participate in small-scale productions.

### **ENGL 152**

#### **Fundamentals of Reading and Writing**

##### **Three Credits**

This course develops and strengthens students' listening, speaking, reading, and writing proficiency in English. It includes grammar, vocabulary expansion, reading skills, writing mechanics, and sentence writing. Students analyze and write, descriptive, narrative, opinion, and cause/effect paragraphs.

### **ENGL 152E**

#### **Fundamentals of Reading and Writing Enhanced**

##### **Three Credits**

This course develops and strengthens students' listening, speaking, reading, and writing proficiency in English. It includes grammar, vocabulary expansion, reading skills, writing mechanics, sentence writing and descriptive, narrative, opinion, and cause/effect paragraphs. In addition to class hours, students must participate in the English laboratory and use a virtual learning platform.

### **ENGL 152EL**

#### **Fundamentals of Reading and Writing Enhanced**

##### **Laboratory**

##### **Zero Credits**

This course develops and strengthens students' listening, speaking, reading, and writing proficiency in English. It includes grammar, vocabulary expansion, reading skills, writing mechanics, sentence writing, and descriptive, narrative, opinion, and cause/effect paragraphs. . In addition to class hours, students must participate in one hour per week of English language laboratory and one hour per week of tutoring/support services.

### **ENGL 153 @**

#### **Advanced Communicative English**

##### **Three Credits**

This is a performance course designed to improve writing and communication skills in English. Students will learn how to choose a topic, gather information and ideas, create topic sentences, construct a thesis statement, and write four different types of essays. The course also provides writing models, guided structural activities, and integrated grammar lessons.

### **ENGL 205**

#### **Introduction to Literary Genres I**

##### **Three Credits**

In this course, the students will read, study, and analyze the different prose genres at an introductory level: the essay, the short story, and the novel at an introductory level. They will become familiar with the various strategies and techniques used in literature to

enhance expression: style, structure, diction, imagery, narrative point-of-view, and irony, among others.

Key components of the course are students' verbal and written responses and analyses of literature selections.

### **ENGL 206**

#### **Introduction to Literary Genres II**

##### **Three Credits**

This is an introductory course to the genre of poetry and drama. In order to enhance students' interpretation and appreciation of poems and plays, various strategies and techniques used in English 205 will be applied, in addition to the study of the elements of poetry and drama. The importance of words, denotation and connotation, imagery, figurative language, tone and musical devices, rhythm and meter, and patterns of traditional poems will be analyzed in poetry; whereas, theme, plot, characters, dialog, music, and visual elements will be discussed in different works of drama. Multiple critical approaches to enrich the examination of the selected literary works will also be used.

### **ENGL 211-212**

#### **Business English I and II**

##### **Six Credits**

This is a required course for students majoring in business administration. Emphasis is on grammar, as well as oral and written business English. Students will practice writing a variety of business letters; they will also prepare a résumé and participate in role-playing for job interviews.

### **ENGL 231 @**

#### **Research and Writing**

##### **Three Credits**

Research and Writing is a performance course designed to develop students' skills in academic research and writing. The focus is on the strategies and techniques needed in the process of producing original academic research-based papers. Students will learn how to choose a topic, create a research question and thesis statement, research information, organize ideas, and use technological and library resources. The principal emphasis will be on correct writing of formal English, clarity, organization, and logical development. In addition, all papers will exhibit proper use of current American Psychological Association (APA) norms. Students will receive practical instruction in the adequate use of computerized resources in the SUAGM libraries and in the application of APA norms of academic style and citation of bibliographical sources.

### **ENGL 245**

#### **Introduction to Grammar**

##### **Three Credits**

This is a required course is a required course for English majors who are planning to be teachers of English as a second language, and also for those who need to improve their mastery of the English grammar. It will give the students sufficient practice exercises to enrich and enhance their skills. The course will also enable the students to attain success in written communication through practice with grammar and language use. The emphasis will be on the traditional approach to grammar.

### **ENGL 317**

#### **English Literature I**

##### **Three Credits**

This is an intensive reading course in English literature that covers from Chaucer to the neoclassical era and from the Romantic era to the present.

### **ENGL 321**

#### **American Literature I**

##### **Three Credits**

This is a survey course which offers a chronological overview of the literature of the United States from colonial times to the present.

### **ENGL 331**

#### **Oral Communication**

##### **Three Credits**

This course deals with the theory and practice of public speaking. It emphasizes the importance of nonverbal communication (body language, eye contact, attire) and verbal techniques (pronunciation, intonation, volume, and rate). Effective interpersonal and intercultural communication is also discussed. Students will practice delivering a variety of speeches, which include selfintroduction, personal experiences, informative and persuasive speeches in an organized and coherent manner. Some speeches require the use of visual aids and technology.

### **ENGL 342**

#### **Adolescent Literature**

##### **Three Credits**

English 342 is an overview of the history and current trends and issues of Young Adult Literature. Strategies, methods, and materials for teaching literature to young adults are examined. It is a required course for students pursuing a degree in Secondary Education in English and prepares students for the Certification requirement of the Department of Education of Puerto Rico.

### **ENGL 345**

## **Children's Literature**

### **Three Credits**

This is a required course focused on preparing students for the English Teachers' Examination, a certification requirement of the Department of Education of Puerto Rico. It comprises an overall presentation of children's literature and its developmental stages from the sixteenth century to the present. It provides a survey of children's literature which includes various authors and illustrators in such genres as the oral tradition, fantasy, realistic and historical fiction, poetry, and the picture book. Future English teachers will acquire techniques and strategies that will prepare them to teach children's literature.

## **ENGL 360**

### **Comparative Analysis: English and Spanish**

#### **Three Credits**

This is a required course focused on preparing students for the English Teachers' Examination, a certification requirement of the Department of Education of Puerto Rico. The course aims to acquaint future teachers with today's concepts of contrastive linguistics, with a view towards raising their awareness of the similarities and differences between selected features of English and Spanish. By understanding particular aspects of both languages and their role in crosslinguistic influence, students will be better prepared to teach language concepts to others.

## **ENGL 371**

### **Introduction to Linguistics I**

#### **Three Credits**

This is a course which introduces future English teachers to linguistic theory, within the context of the other social sciences that seek to describe and analyze human behavior. Emphasis is on gaining an understanding of the different levels of linguistic analysis, which include: phonetics/phonology; morphology; syntax; and semantics.

## **ENGL 600**

### **Advanced Writing Seminar for Graduate Students**

#### **Zero Credits**

This is an advanced writing seminar for graduate students in any stage of their studies. The course will prepare the students by offering with an overview of the necessary academic writing and research skills. In addition, the seminar will include the technical aspects for effective academic writing.

## **FRCH 101**

### **Basic Course in French I**

## **Three Credits**

The purpose of this course is to familiarize students with the French language and culture through the use of readings, writing, listening, and conversational skills.

## **FRCH 102**

### **Basic Course in French II**

#### **Three Credits**

This course is a continuation of FRCH 101, and which will continue to develop students' knowledge of the French language and culture through the use of reading, writing, listening, and conversational skills.

## **FRCH 201**

### **Intermediate French I**

#### **Three Credits**

The course centers on the study of French grammar and intermediate conversational skills, and includes practice in reading and writing.

## **FRCH 202**

### **Intermediate French II**

#### **Three Credits**

This course is a continuation of FRCH 201, and will study French grammar and intermediate conversational skill. It includes practice in reading and writing.

## **HIST 221**

### **Ancient and Medieval History**

#### **Three Credits**

This course begins with an analysis of some key concepts of the discipline of history (pre-historic and historic). It includes the study of ancient civilizations (Mesopotamia, Egypt, India and China). It explores Greek and Roman civilizations, continuing up to the Medieval period, and culminating with the fall of the Byzantine Empire.

## **HIST 230**

### **Renaissance, Reform and the Rise of the State**

#### **Three Credits**

This course studies the history of Europe between the XV and XVI centuries. The political, social and economic panorama at the start of this period is presented. The Renaissance as a cultural movement is reviewed, the colonization of America as a central event in the European economy of that period is presented, and the Protestant and Catholic Reformations are analyzed. Lastly, the history of

Europe in the XVII century and the establishment of the State and its importance in the modern and contemporary age are treated. The student student will obtain a general and panoramic vision of the historical origins of the West.

### **HIST 231**

#### **European History XIX Century**

##### **Three Credits**

The course deals with the development of liberalism, nationalism and industrialization in conflict with authoritarian forces that were prevalent on the continent during the XIX century. Topics include the development of nations and international rivalry leading to World War I.

### **HIST 232**

#### **Contemporary World Problems**

##### **Three Credits**

The course centers on the problems of the contemporary world and the consequences that these entail as seen in the context current events. Events occurring throughout the 20<sup>th</sup> and 21<sup>st</sup> centuries are discussed. The Cold War, colonialism, neocolonialism and globalization are discussed.

### **HIST 253 @**

#### **History of Puerto Rico (Compendium)**

##### **Three Credits**

The course is a compendium of the history of Puerto Rico from prehistory to the present. It begins with a discussion of the principal geographical aspects of Puerto Rico. Socioeconomic, political, cultural, and religious issues will also be analyzed and interpreted from a panoramic perspective.

### **HIST 257**

#### **Puerto Rico in the XX Century**

##### **Three Credits**

The course deals with political, economic, social, and cultural problems beginning with the American sovereignty in 1898 up to the present.

### **HIST 261**

#### **Latin American History I**

##### **Three Credits**

The course centers on the historical evolution of the countries that form Latin America from Precolumbian culture to the XVIII century; the important geographical elements that influenced this development; economic, social, cultural, and religious life of the colonies from the XV to XVIII centuries; the ideas of the illustration, the reforms that took place in the colonies, and the consequences of these reforms.

### **HIST 262**

### **Latin American History II**

#### **Three Credits**

The antecedents of the independence movements are studied. The events in Spain at the start of the XIX century and their repercussions in the colonies, the principal leaders, and the most important and dramatic events in the wars for independence are also discussed. The political, economic and social situation of the Latin American nations from the XIX to the XXI centuries. The political, social, economic and cultural current of present Latin America is studied.

### **HIST 271**

#### **History of the United States of America I**

##### **Three Credits**

The course centers on the study of the development of the United States from its formation to the Reconstruction in the second half of the XIX century is studied. The evolution of political, social and economic institutions of the nation and the distinctive traits of its society are emphasized. Its formation during the colonial period, the Revolution, the growth of the young colony, The Civil War and Reconstruction will be analyzed.

### **HIST 273**

#### **History of the United States of America (Compendium)**

##### **Three Credits**

The course presents the development of the American nation from the beginning of its society to the present. It emphasizes the evolution of political, social, and economic institutions, and the distinctive traits of its society.

### **HIST 305**

#### **History of the Caribbean**

##### **Three Credits**

The historical evolution of the Caribbean region in the centuries elapsed from its pre-Columbian origins to the present are studied, as well as the geographical aspects of the islands, their conquest and, colonization by European interests. The political, socio-economic and cultural aspects of the region are analyzed, as well as the hegemony of the United States over the Caribbean up to present time.

### **HIST 320**

#### **History of Africa**

**Three Credits**

This course focuses on the historical development of Africa from its origins to the present, as well as the continent's geography. It emphasizes the origins of African culture and the historical sources. The colonial period, the struggle for independence and the emergence of new national states framed in the present historical context and their role in world problems are also studied. The problems currently faced are discussed, highlighting the political, socioeconomic and cultural aspects, as well as the historical processes, cultural and traditional values, beliefs and customs that have influenced the development of humanity. The relationship, contributions and importance of Africa for Puerto Rico throughout history are discussed.

**HUMA 111****Civilizations and Universal Culture I****Three Credits**

The course analyzes the development of the human being with emphasis on culture, arts, philosophy, religions and ideas, thus encouraging students to understand the differences between countries and societies from their origins until the Middle Ages.

**HUMA 112****Civilizations and Universal Culture II****Three Credits**

The course centers on the development of the human beings with emphasis on culture, arts, philosophy, religions and ideas. Students are encouraged to understand the differences between countries and societies from the Renaissance to the present.

**ITAL 101****Introduction to Italian I****Three Credits**

This is an introductory course which will familiarize students with the Italian language and culture.

**ITAL 102****Introduction to Italian II****Three Credits**

This course is a continuation course of ITAL 101. It will further develop students' language skills in Italian.

**ITAL 201****Intermediate Italian I****Three Credits**

The course deals with grammar, reading, writing, and conversation in Italian.

**ITAL 202****Intermediate Italian II****Three Credits**

This course is a continuation course of ITAL 201 and will further develop Italian grammar, reading, writing, and conversation skills.

**LAGE 110****Introduction to Professional Development****Three Credits**

This course aims to prepare students to transition into the professional world or to continue their studies in a bachelor's degree program. It will provide students with the knowledge necessary to conduct employment searches or searches for bachelor's degree programs. Students will also learn to write and disseminate cover letters, resumes and university application essays, and to effectively prepare for professional or academic interviews.

**MATH 120****Introductory Algebra****Three Credits**

The course deals with elementary algebra topics such as: theory of sets, real numbers, algebraic expressions, equations, linear inequalities and operations with polynomials.

**MATH 120E****Introductory Algebra Enhanced****Three Credits**

This course aims to develop students the basic mathematical competencies in the following areas: arithmetic, algebra and geometry. The main topics covered are: arithmetic operations, equations and linear inequalities, area and perimeter of polygons and circles, and volume of solids. Special emphasis is placed on problem solving. In addition to the conference and laboratory hours, the student will practice independently using a virtual platform.

**MATH 120EL****Introductory Algebra Enhanced Laboratory****N/A Credits**

This course aims to develop students basic mathematical competency in the following areas: arithmetic, algebra and geometry. The main topics covered are: arithmetic operations, equations and linear inequalities, area and perimeter of polygons

and circles, and volume of solids. Special emphasis is placed on problem solving. In addition to the conference and laboratory hours, the student will practice independently using a virtual platform.

### **MUSI 101**

#### **Music Appreciation**

##### **Three Credits**

The course centers on music as a source of aesthetic enjoyment. Students learn to recognize the forms of musical composition (folk and art songs, the fugue, the sonata, the symphony, the opera, etc.) through lectures, recordings, and demonstrations by the professor, other students, or guest artists.

### **MUSI 103**

#### **University Choral Ensemble I**

##### **N/A Credits**

The course prepares students for the interpretation of chamber choral music as part of the Universidad Ana G. Méndez-Recinto de Gurabo Chorus. The course includes the rehearsal and performance of academic works from the universal choral repertoire, as well as popular and folkloric music. The skills are developed by means of weekly rehearsals and intensive workshops in score sight-reading and vocal technique for choral ensembles. Moreover, as part of the educational experience the chorus presents concerts and participates in institutional activities, as well as other cultural events.

### **MUSI 104**

#### **University Choral Ensemble 2**

The course prepares students for the interpretation of chamber choral music as part of the Universidad Ana G. Méndez-Recinto de Gurabo Chorus. The course includes the rehearsal and performance of academic works from the universal choral repertoire, as well as popular and folkloric music. The skills are developed by means of weekly rehearsals and intensive workshops in score sight-reading and vocal technique for choral ensembles. Moreover, as part of the educational experience the chorus presents concerts and participates in institutional activities, as well as other cultural events.

### **PORT 101**

#### **Introduction to the Study of Portuguese I**

##### **Three Credits**

PORT 101 aims to familiarize and guide students in their first contact with the Portuguese language and Brazilian culture. It focuses on basic pronunciation and intonation knowledge; as well as, the acquisition of essential everyday lexicon and grammar rules necessary for effective communication. An

initial contact with the Brazilian culture through the use of cultural elements such as: music, literature, and carnival will also be provided. Additionally, fundamental differences between the Portuguese language spoken in Brazil and in Portugal will be examined.

### **PORT 102**

#### **Introduction to the Study of Portuguese II**

##### **Three Credits**

PORT 102 continues to present basic knowledge that allows students to achieve effective communication in conversational Portuguese. Activities and readings will be presented to improve pronunciation, intonation, comprehension, and basic writing skills. Additionally, students will be exposed to Brazilian culture through the study of: soap operas, ecology, education, cities, and legends, among others.

### **PHIL 201**

#### **Introduction to Philosophy I**

##### **Three Credits**

Study of the nature and development of philosophical thoughts and its problems. Studies the principal philosophers from Greece to the present.

### **SOSC 111**

#### **Individual, Community, Social and Ethical Responsibility I**

##### **Three Credits**

This course centers on the historical development of the social sciences and their relevance in contemporary society. It emphasizes the study of individuals as members of a community. Their social, biological, cultural and psychological dimensions, along with their ethical and social responsibilities, will also be examined.

### **SOSC 112**

#### **Individual, Community, Social and Ethical Responsibility II**

##### **Three Credits**

This course analyzes the experience of the individual as a member of a community: civic, political, economical and environmental dimensions along with their ethical and social responsibilities will be addressed.

### **SPAN 107**

#### **Fundamentals of Reading and Writing Bilingual I**

##### **Three Credits**

The course emphasizes the development of reading, writing, and speaking skills of for students of Spanish

as a second language. The course gives emphasis to vocabulary enrichment and grammar from a bilingual point of view. Students are required to attend a weekly session in the language laboratory.

### **SPAN 108**

#### **Fundamentals of Reading and Writing Bilingual II**

##### **Three Credits**

This course is a continuation course which continues to develop students' reading, writing, and speaking skills in Spanish as a second language. It will cover writing techniques to develop paragraphs, letters, and resúmenes.

### **SPAN 141**

#### **Spanish as a Foreign Language I**

##### **Three Credits**

This course aims to guide students in their first contact with the language and culture of Puerto Rican Spanish. The course will present basic concepts in language and culture which will allow students to achieve effective oral communication in Spanish. It also focuses on the teaching of pronunciation and intonation of the Spanish language. Additionally, the course concentrates on the acquisition of vocabulary needed for daily use, as well as the use of vocabulary in context. In addition to the class contact hours, students will engage in independent practice in a virtual platform.

### **SPAN 152**

#### **Fundamentals of Reading and Writing**

##### **Three Credits**

This course develops paragraph writing skills, as well as the structure, the characteristics, and methods for the organization of ideas through the reading and analysis of texts. Basic elements of communication and the Spanish language are studied, in addition to the features of narrative and descriptive discourse.

### **SPAN 152 I**

#### **Fundamentals of Reading and Writing Enhanced**

##### **Three Credits**

This course develops paragraph writing skills, as well as the structure, the characteristics and methods for the organization of ideas through the reading and analysis of texts. Basic elements of communication and the Spanish language are studied, in addition to the features of narrative and descriptive discourse. As a support to the class, the student must attend the language laboratory for tutoring, and will practice independently with a virtual platform.

### **SPAN 152 IL**

#### **Fundamentals of Reading and Writing Enhanced Lab**

### **Cero Credits**

This course develops paragraph writing skills, as well as the structure, the characteristics and methods for the organization of ideas through the reading and analysis of texts. Basic elements of communication and the Spanish language are studied, in addition to the features of narrative and descriptive discourse. As a support to the class, the student must attend the language lab for tutoring, and will practice independently with a virtual platform.

### **SPAN 201-202**

#### **Business Spanish I and II**

##### **Six Credits**

The course aims to develop communication skills directed at business correspondence. Emphasis is on the contribution of logic, psychology, ethics, and grammar to communications.

### **SPAN 213**

#### **Literary Genres I**

##### **Three Credits**

This course deals will deal with the characteristics of literary language, poetry, drama, and the essay. Illustrative works of each of these literary genres will be analyzed. The course will expose the students to language as a means for artistic creation, and will provide the students with reading strategies to develop an active approach, to reading not only of literary texts, but of any kind of discourse.

### **SPAN 214**

#### **Introduction to Literary Genres II**

##### **Three Credits**

This course deals with the characteristics of the narrative genres, especially that of short stories and novels. The process of evolution of these genres will be studied, and illustrative works of both genres will be analyzed. The course will expose the students to language as a mean for artistic creation, and will provide the students with reading strategies to develop an active approach to reading, not only of narrative texts, but of any kind of discourse.

### **SPAN 215**

#### **Advanced Composition**

##### **Three Credits**

The course emphasizes the development of the skills needed to write logically and correctly. Research techniques will also be covered.

### **SPAN 221-222**

## **Spanish Literature I and II**

### **Six Credits**

This course is a panoramic view of Spanish Literature from its origins up until the beginning of the Spanish Renaissance. Special attention will be placed on the distinctive features of Spain's historic and cultural background until the end of the Medieval times. Illustrative texts from this period will be read and analyzed. On the second semester the students will be exposed to a diachronic view of Spanish literature from the Renaissance (16th century) to the so-called Generation of '98 (beginnings of the 20th century). The main authors and works of these literary periods will be studied, taking into consideration their historical and cultural context.

## **SPAN 230**

### **Introduction to Linguistics**

#### **Three Credits**

This course studies some general aspects of the origin of modern linguistics, the history and evolution of Spanish linguistics, and the main elements of the study of language. The course is based on the notion of language as a linguistic sign. The topics of language acquisition and language variations, which depend on geographic, social and individual aspects, will also be considered.

## **SPAN 250 @**

### **Writing Techniques**

#### **Three Credits**

This course will develop oral and writing skills, which will enable composition at the university and professional level. Diverse strategies will be used for the reading and writing of expository, argumentative and professional texts.

## **SPAN 255 @**

### **Research and Writing**

#### **Three Credits**

This course aims to develop students research and advanced academic writing skills. Throughout the course, the process of critical inquiry (the selection of a topic, statement and resolution of a hypothesis, and the search, revision and use of data, its revision and use) will be covered. In addition, the writing (pre-writing, organization of details, edition, correction, re-writing), will be emphasized.

## **SPAN 265**

### **Advanced Grammar**

#### **Three Credits**

This course is an in-depth study of the morphological and syntactical aspects of the Spanish language.

## **SPAN 290**

### **Language and Culture of Puerto Rico**

#### **Three Credits**

This course aims to immerse students in the language and culture of Puerto Rican Spanish. The course will present basic concepts in language and culture which will allow students to achieve effective oral communication in Spanish. It will also focus on the teaching of phonetics, pronunciation and intonation of the Spanish language. Additionally, the course concentrates on the acquisition of vocabulary needed for daily use, vocabulary in context, reading and writing for daily communications. In addition to the classroom experience, students will engage in several real-world dialogues (on and off campus) with community members and experts in the fields of business, health, education, culture and the fine arts. The course also requires students to participate in a virtual platform in and outside of the classroom.

## **SPAN 323**

### **Spanish Literature**

#### **Three Credits**

The course covers Spanish literature from the Golden Century to the present.

## **SPAN 331**

### **Oratory and Speech Communication**

#### **Three Credits**

This course will develop students' skills in performing effective oral presentations both in their personal and professional life. Through practice and theoretical discussions, using examples and showing diverse strategies and styles, the course will help them develop a critical sense about the essence of an effective oral presentation.

## **SPAN 453**

### **Puerto Rican Literature**

#### **Three Credits**

This course will deal with the main literary movements, authors and works of Puerto Rican literature. It will discuss the evolution of Puerto Rican literature from the Colonial period to the present.

## **SPAN 463**

### **Spanish-American Literature**

#### **Three Credits**

This course will deal with Spanish American Literature and its origins since the 15th century up to the present. The main authors and works of these literary periods will be studied, taking into consideration their historical and cultural context.

\*Students will be placed into appropriate levels by CEEB scores or by department placement exams.

Note: Literature courses need not be taken in numerical order.

### **SPAN 490**

#### **Language and Culture of Puerto Rico II**

##### **Three Credits**

This course aims to immerse students in the language and culture of Puerto Rican Spanish. The course will present concepts in language and culture which will allow students to achieve effective written and oral communication in Spanish. Additionally, the course will concentrate on the acquisition of advanced linguistic skills for social, professional and academic purposes. In addition to the classroom experience, students will engage in several realworld dialogues (on and off campus) with community members and experts in the fields of business, health, education, culture and the fine arts. The course also requires students to participate in a virtual platform in and outside of the classroom.

### **SPAN 600**

#### **Advanced Writing Seminar for Graduate Students**

##### **Cero Credits**

This is an advanced writing seminar for graduate students in any stage of their studies. The course will prepare the student with the necessary academic writing and research skills. In addition, the seminar will include the ethical and technical aspects for effective academic writing.

# SCHOOL OF BUSINESS AND ENTREPRENEURSHIP

UT's School of Business and Entrepreneurship academic offer ranges from certificates to doctoral studies. Programs have been designed taking into consideration the needs and requirements of the industrial, entrepreneurial, professional and public sectors in the Island. The general areas of specialization in its academic programs are: Entrepreneurship, Management, Marketing, Accounting, Information Management and International Business. Other academic tracks such as quality, taxation, human resources and materials are offered under the main areas of specialization.

The School has a visiting faculty in the Management and Management Information System programs proceeding from countries such as: Spain, Mexico, India and the United States. Its full-time faculty is integrated by highly competitive members, most of whom have doctorate degrees.

In the interest of achieving its objective of providing the student with a global business vision, the School of Business and Entrepreneurship maintains relationships and collaborative agreements with prestigious universities around the world.

- Groupe ESC Toulouse
- Oslo School of Management in Norway
- Argosy University
- Florida International University
- Other institutions in process in: Spain, Peru, Brazil, Chile, United States and Costa Rica.

## SPECIALIZED ACCREDITATIONS



On April of 2011, the School of Business and Entrepreneurship has earned the specialized accreditation awarded by the "Association to Advance Collegiate Schools of Business" (AACSB, International). The School thus positions itself as the only institution to have that accreditation in Puerto Rico and the Caribbean. AACSB accreditation is the hallmark of excellence in business education, and has been earned by less than 5% of the world's business schools. The school renewed its accreditation status in 2016.

## PARTICIPATING INTERNATIONAL ORGANIZATIONS

- Consejo Latinoamericano de Administración de Empresas, CLADEA
- AACBS International Academy of International Business
- Fundación para la Educación Internacional, FESI
- Red Latinoamericana Emprendedora
- World Economic Forum (WEF)

## COLLABORATIVE RELATIONS WITH OTHER INTERNATIONAL BUSINESS SCHOOLS

- Universidad Veracruzana
- Instituto Politécnico Nacional de Méjico
- Universidad de las Américas, en Puebla
- George Washington University
- Instituto Tecnológico de Monterrey
- Universidad Autónoma de Madrid
- Universidad Politécnica de Madrid
- Universidad de San Pablo

## MISSION

The Mission of the School of Business and Entrepreneurship at the Universidad Ana G. Méndez-Recinto de Gurabo is to develop professionals, leaders and academics with a superior theoretical knowledge and practical skills for the creation and development of new enterprises and effective management of existing business. Our students acquire the skills, values and sense of social responsibility in their business practices through education that is entrepreneurial in spirit, ethical in its approach and global in orientation. Excellence in teaching is enhanced by a faculty committed to professional development, intellectual contributions and service. As a professional school of business, we want to have a positive impact on the society, organizations and the communities of which our students and alumni are a part.

## VISION

The vision of the school is to be the leading school in business education and research in Puerto Rico and the Caribbean and the preferred partner for successful alliances for the government, private sector and non-profit organizations, both national and international.

## FACULTY

**Alizabeth Sánchez** / Assistant Professor  
PhD, Autonomous University of Barcelona

**Angel Ojeda Castro** / Associate Professor  
DBA, Universidad del Turabo

**Brunilda Aponte** / Associate Professor  
PhD, Universidad Interamericana de Puerto Rico

**Carlos M. Rosa-Vázquez** / Professor  
DBA, Universidad del Turabo

**Carlos R. Figueroa-Vega** / Associate Professor  
MS, Jackson State University

**Carmen Vargas-Segarra** / Professor  
EdD, Nova University

**César R. Sobrino** / Assistant Professor  
PhD, West Virginia University, US

**Edgar Rodriguez Gomez** / Assistant Professor  
DBA, Universidad del Turabo

**Enid Miranda Ramirez** / Assistant Professor  
DBA, Universidad del Turabo

**Evelyn Lopez Gonzalez** / Assistant Professor  
DBA, Universidad del Turabo

**Isabel Rivera-Ruiz** / Professor  
DBA, Argosy University

**José A Flecha Ortiz** / Assistant Professor  
DBA, Argosy University

**José O. Cruz** / Assistant Professor DBA,  
Universidad del León

**Juan Carlos Sosa** / Professor  
PhD, Universidad de Puerto Rico

**Juan J. Carrasquillo-González** / Associate Professor  
DBA, Pontificia Universidad Católica de Puerto Rico

**Juan Valera Marquez** / Assistant Professor  
PhD, Universidad de Puerto Rico

**Litza Meléndez-Ramos** / Assistant Professor  
PhD, Universidad de Extremadura

**Luz M. Ríos-Negrón** / Associate Professor  
PhD, Universidad de San Pablo

**María de los M. Santos-Corrada** / Associate Professor  
PhD, Universidad Complutense, Madrid

**Maria Fonseca Rodriguez** / Instructor  
MBA, Universidad de Puerto Rico

**María Zayas-Ortiz** / Professor  
PhD, Universidad Interamericana de Puerto Rico

**Maribel Ortiz-Soto** / Associate Professor  
PhD, Universidad de Puerto Rico

**Pablo A. Colón-Gruñeiro** / Professor  
MBA, Universidad de Puerto Rico

**Pedro Ortiz Santos** / Assistant Professor  
PhD, Universidad Interamericana de Puerto Rico

**Sandra Mena** / Assistant Professor  
PhD, Universidad de León, Spain

**Sylvia Cardona-Colón** / Assistant Professor  
PhD, Universidad de San Pablo

**Virgin Dones** / Associate Professor  
PhD, Universidad Interamericana de Puerto Rico

## STUDENT ORGANIZATIONS

- Association of Office Administration Students
- Association of Accounting Students
- Association of Administration & Materials Control Students
- Association of Information Systems Students
- Association of Management Students

- Association of Trade Students
- Student Chapter of the Chamber of Commerce

The different student associations in the School of Business and Entrepreneurship are created in order to foster unity and communication among the students, professors and professionals in the Business Administration area. Students have the opportunity to express their ideas and to participate in activities promoting their professional development. This gives students the opportunity to demonstrate qualities and characteristics which contribute to the success of all good employees and citizens. Students participate in activities both within and outside the Institution. Thus, students are offered opportunities to visit companies, to attend conventions and to participate in university competitions related to their profession.

## PROGRAMS OF STUDY

### ASSOCIATE DEGREE IN BUSINESS ADMINISTRATION IN ACCOUNTING

Graduates of the associate degree in Business Administration in Accounting will be able to coordinate and carry out related rules and practices of accounting activities. Among the activities of the accountant are: preparation of financial statements, cost analysis, assessments, and audits, among others. This rigorous professional, accurate and timely manner produces and provides information to its customers, private and government agencies and the general public, for economic and financial decision making.

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>24</b>
<b>Core Courses</b>	<b>24</b>
<b>Major Courses</b>	<b>12</b>

<b>General Education Courses</b>	<b>(24 credits)</b>
ENGL 152	Fundamentals of Reading and Writing 3
ENGL 153	Advanced Communicative English 3
ENGL 231	Research and Writing 3
MATH 199	Quantitative Methods 3
SPAN 152	Fundamentals of Reading and Writing 3
SPAN 250	Writing Techniques 3
SPAN 255	Research and Writing 3
FSBE 105	Freshman Seminar 3

<b>Core Courses</b>	<b>(24 credits)</b>
---------------------	---------------------

ACCO 111	Introduction to Accounting I	3
ACCO 112	Introduction to Accounting II	3
ACCO 113	Introduction to Accounting III	3
MARK 133	Principles of Marketing	3
COIS 201	Data Processing	3
MANA 230	Organizational Behavior Management	3
STAT 201	Business Statistics I	3
ENTR 360	Entrepreneurship	3

<b>Major Courses</b>	<b>(12 credits)</b>	
ACCO 301	Intermediate Accounting I	3
ACCO 302	Intermediate Accounting II	3
ACCO 315	Intermediate Accounting III	3
ACCO 303	Cost Accounting I	3
ACCO 305	Income Tax for Puerto Rico I	3
ACCO 350	Computerized Accounting System	3
ACCO 304	Auditing I	3
ACCO 405	Puerto Rico Taxes II	3

### ASSOCIATE DEGREE IN BUSINESS ADMINISTRATION IN COMPUTERIZED INFORMATION SYSTEMS

Graduates of the associate degree in Computerized Information Systems will have the knowledge and skills to propose, implement and evaluate comprehensive and efficient information problems of organizations through expert management of information technologies and systems solutions. It offers expertise in the field of programming and analysis and application development.

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>24</b>
<b>Core Courses</b>	<b>21</b>
<b>Major Courses</b>	<b>15</b>

<b>General Education Courses</b>	<b>(24 credits)</b>
ENGL 152	Fundamentals of Reading and Writing 3
ENGL 153	Advanced Communicative English 3
ENGL 231	Research and Writing 3
MATH 199	Math for Administrative Studies 3
SPAN 152	Fundamentals of Reading and Writing 3
SPAN 250	Writing Techniques 3
SPAN 255	Research and Writing 3
FSBE 105	Freshman Seminar 3

<b>Core Courses</b>	<b>(21 credits)</b>
ACCO 109	Basic Accounting for Non-Accountants I 3
ACCO 110	Basic Accounting for Non-Accountants 3

II		3
MARK 133	Principles of Marketing	3
COIS 101	Introduction to Computer Based Systems	3
MANA 230	Organizational Behavior Management	3
ENTR 360	Entrepreneurship	3
STAT 201	Business Statistics I	3
<b>Major Courses</b>		<b>(15 credits)</b>
COIS 102	Programming Principles	3
COIS 350	Structured Design with Object Programming Applications	3
COIS 360	Telecommunication Computer Networks	3
COIS 250	Systems Analysis and Design	3
COIS 290	Information Systems Development Workshop	3

### ASSOCIATE DEGREE IN BUSINESS ADMINISTRATION IN MANAGEMENT

The associate degree in Business Administration in Management, enables students to take various administrative positions in business and industry, government agencies or nonprofit organizations. The manager is the person responsible for the efficient management of the company. He/She is committed to efficiently use the resources of the organization efficiently in order to achieve the company objectives through the functions of employees to fulfill the mission of the company.

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>24</b>
<b>Core Courses</b>	<b>24</b>
<b>Major Courses</b>	<b>12</b>

<b>General Studies</b>		<b>(24 credits)</b>
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
MATH 199	Quantitative Methods	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

FSBE 105	Freshman Seminar	3
<b>Core Courses</b>		<b>(24 credits)</b>
ACCO 109	Basic Accounting for Non-Accountants I	3
ACCO 110	Basic Accounting for Non-Accountants II	3
MARK 133	Principles of Marketing	3
COIS 201	Data Processing Principles	3
MANA 230	Organizational Behavior Management	3
MANA 204	Business Law Entrepreneurial	3
STAT 201	Business Statistics I	3
ENTR 360	Entrepreneurship	3

<b>Major Courses</b>		<b>(12 credits)</b>
MANA 213	Human Resource Administration	3
MANA 302	Labor Legislation	3
MANA 304	Project Management	3
MANA 321	Supervision and Leadership	3
MANA 340	Operations Management	3

#### Notes for all programs:

1. The ENGL 152 may require a previous course, according to the score obtained in the placement test or the CEEB English test.
2. The SPAN 152 may require a previous course, according to the score obtained in the placement test or the CEEB Spanish test.
3. COIS courses require to be enrollment in a lab section.
4. The minimum grade point average (GPA) for graduation is 2.30 in major courses and 2.00 in other courses.
5. MATH 199 has a prerequisite (MATH 121) or approval of the placement test.

### ASSOCIATE DEGREE IN SALES AND MARKETING

The purpose of this program is to develop in the students, skills in the area of sales and marketing, which serve for the creation of new companies and the development of entrepreneurial initiatives that add economic and social value in different contexts, within of parameters of social responsibility, through active learning methodologies..

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>24</b>
<b>Core Courses</b>	<b>24</b>
<b>Major Courses</b>	<b>12</b>

<b>General Studies</b>		<b>(24 credits)</b>
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3

MATH 199	Quantitative Methods	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
FSBE 105	Freshman Seminar	3

**Core Courses (24 credits)**

ACCO 109	Basic Accounting for Non-Accountants I	3
ACCO 110	Basic Accounting for Non-Accountants II	3
MARK 134	Introduction to Marketing	3
MARK 306	Sales	3
COIS 201	Data Processing Principles	3
MANA 230	Organizational Behavior Management	3
ENTR 360	Entrepreneurship	3
STAT 201	Business Statistics I	3

**Major Courses (12 credits)**

MARK 318	Human Resource Administration	3
MARK 319	Sales B2B	3
MARK 440	Sales Management	3
MARK 402	Marketing Integrated Communication	3
MARK 321	Customer Service Management	3
MARK 415	Sales Forecasting	3

**BACHELOR'S DEGREE IN BUSINESS ADMINISTRATION WITH CONCENTRATION IN ACCOUNTING**

This major prepares the student in diverse aspects of accounting, such as the preparation of financial statements, analysis of costs, taxes, auditing, and principles of accounting posting. The student has the opportunity to take additional courses in the following areas: tax systems of Puerto Rico, federal taxes, computerized information systems of accounting, as well as accounting for government and nonprofit organizations.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>45</b>
<b>Core Courses</b>	<b>39</b>
<b>Major Courses</b>	<b>30</b>
<b>Electives</b>	<b>6</b>

**General Education (for all majors) (45 credits)**

FSBE 105	Freshman Seminar	3
ECON 123	Economic Principles and Problems	

	(Compendium)	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
INSC 101	Integrated Sciences I	3
INSC 102	Integrated Sciences II	3
MATH 199	Quantitative Methods I	3
PSYC 123	General Psychology	3
SOSC 111	Individual, Community, Government and Social Responsibility I	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

**Core Courses (39 credits)**

ACCO 111	Introduction to Accounting I	3
ACCO 112	Introduction to Accounting II	3
ACCO 113	Introduction to Accounting III	3
MARK 133	Principles of Marketing	3
COIS 201	Data Processing	3
FINA 202	Business Finance	3
MANA 340	Operations Management	3
MANA 204	Business Law and Entrepreneurial	3
MANA 230	Organizational Behavior	3
INBU 350	International Business	3
ENTR 360	Entrepreneurship	3
STAT 201	Business Statistics I	3
STAT 202	Business Statistics II	3

**Major Courses (30 credits)**

ACCO 301	Intermediate Accounting I	3
ACCO 302	Intermediate Accounting II	3
ACCO 315	Intermediate Accounting III	3
ACCO 304	Auditing	3
ACCO 305	Income Tax for Puerto Rico	3
ACCO 350	Accounting Computerized Systems	3
ACCO 303	Cost Accounting	3
ACCO 420	Governmental and Non Profit Accounting I	3
ACCO 450	Advanced Accounting	3
ACCO 453	Project	3

**Electives (6 credits)**

ACCO 307	Auditing II	3
ACCO 310	Forensic Accounting	3
ACCO 320	Federal Taxes I	3
ACCO 321	Federal Taxes II	3

ACCO 391	Cost Accounting II	3
ACCO 405	Puerto Rico Taxes II (Other obligation)	3
ACCO 340	EDP Auditing	3
ACCO 360	Corporate Governance	3
ACCO 395	Managerial Accounting I	3
ACCO 396	Managerial Accounting II	3
FINA 410	Corporate Finance	3
ACCO 454	Internship in Accounting	3

**BACHELOR'S DEGREE IN BUSINESS ADMINISTRATION  
WITH CONCENTRATION IN COMPUTERIZED  
INFORMATION SYSTEMS**

The courses in this major offer student the technical knowledge required to become qualified in the field of programming, as well as in the analysis and development of computer applications. Systems analysis and design, handling of applications in databases, and development of applications using a variety of equipment and computer systems are essential requirements of this specialty. Courses related to auditing and security of systems, telecommunications and networks of microcomputers, programming by objects, programs of productivity and information systems for decision-making are also offered. Upon graduation the student will be prepared to work in organizations and companies that use different computerized systems in their operations.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>36</b>
<b>36 Major Courses</b>	<b>36</b>

**General Education (for all majors) (48 credits)**

FSBE 105	Freshman Seminar	3
ECON 123	Economic Principles and Problems (Compendium)	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
PHSC 101	Physical Sciences I	3
PHSC 102	Physical Sciences II	3
MATH 199	Quantitative Methods I	3
MATH 200	Quantitative Methods II	3
PSYC 123	General Psychology	3
SOSC 111	Individual, Community, Government	

	and Social Responsibility I	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

**Core Courses (36 credits)**

ACCO 109	Basic Accounting for Non-accountants I	3
ACCO 110	Basic Accounting for Non-accountants II	3
MARK 133	Principles of Marketing	3
COIS 101	Introduction to Computer-Based Systems	3
FINA 202	Business Finance	3
MANA 204	Business Law and Entrepreneurial	3
MANA 230	Organizational Behavior	3
MANA 340	Operations Management	3
INBU 350	International Business	3
ENTR 360	Entrepreneurship	3
STAT 201	Business Statistics I	3
STAT 202	Business Statistics II	3

**Major Courses (36 credits)**

COIS 102	Programming Principles	3
COIS 250	Systems Analysis and Design	3
COIS 350	Structured Design with Object Programming	3
COIS 360	Telecommunications and Computers Networks	3
COIS 420	Introduction to Database Management and Design	3
COIS 421	PL/SQL Programming	3
COIS 423	Database Administration	3
COIS 425	Object-Oriented Programming Language Java	3
COIS 434	Application Development for Mobile Devices	3
COIS 440	E-Commerce Methodology and Technology	3
COIS 470	Application Programming for the Web	3
COIS 450	Software Development Project	3

Note: Computer programming courses require four (4) hours of laboratory work per week.

### BACHELOR'S DEGREE IN BUSINESS ADMINISTRATION WITH CONCENTRATION IN MANAGEMENT

The principal goal of this major is to enable students to occupy different administrative positions in commercial and industrial companies, government agencies, and nonprofit organizations. Among courses included in the program are: accounting for decision-making, administration of human resources, labor legislation, supervision, management of operations and managerial strategies. In addition, students can select courses in areas such as: administration of small businesses, real estate, government and business, principles of insurance and development of companies.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>36 Major Courses</b>
<b>Major Elective Courses</b>	<b>18</b>
<b>Elective Courses</b>	<b>6</b>

#### General Education (for all majors) (48 credits)

FSBE 105	Freshman Seminar	3
ECON 123	Economic Principles and Problems (Compendium)	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
INSC 101	Integrated Sciences I	3
INSC 102	Integrated Sciences II	3
MATH 199	Quantitative Methods I	3
MATH 200	Quantitative Methods II	3
PSYC 123	General Psychology	3
SOSC 111	Individual, Community, Government and Social Responsibility I	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

#### Core Courses (36 credits)

ACCO 109	Basic Accounting for Non-accountants I	3
ACCO 110	Basic Accounting for Non-accountants II	3
MARK 133	Principles of Marketing	3

COIS 201	Data Processing	3
FINA 202	Business Finance	3
MANA 340	Operations Management	3
MANA 204	Business Law and Entrepreneurial	3
MANA 230	Organizational Behavior	3
INBU 350	International Business	3
STAT 201	Business Statistics I	3
STAT 202	Business Statistics II	3

#### Major Courses (18 credits)

MANA 213	Human Resource Administration	3
MANA 321	Supervision and Leadership	3
MANA 304	Project Management	
MANA 401	Enterprise Strategy	3
HURM 412	Training and Development	3
MANA 450	Project	3

#### Major Elective Courses (12 credits)

MANA 302	Labor Legislation	3
INOP 320	Advanced Operations and Production Management	
HURM 400	Safety and Occupational Health	3
INOP 322	Industry Management Services	3
ENTR 401	Identification and Assessment of Business Opportunities	3
MANA 422	Compensation Management	3

#### Free Elective Courses (6 credits)

### BACHELOR'S DEGREE IN BUSINESS ADMINISTRATION WITH CONCENTRATION IN MARKETING

This major promotes technical competition and the development of skills to carry out market research, to prepare business plans, sales projections and promotional campaigns. The graduate can work in advertising agencies, public relations firms, market research firms and sales departments in diverse companies.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>45</b>
<b>Core Courses</b>	<b>36 Major Courses</b>
<b>Electives Courses</b>	<b>18</b>
	<b>21</b>

#### General Education (45 credits)

FSBE 105	Freshman Seminar	3
ECON 123	Economic Principles and Problems	

	(Compendium)	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
INSC 101	Integrated Sciences I	3
INSC 102	Integrated Sciences II	3
MATH 199	Quantitative Methods I	3
PSYC 123	General Psychology	3
SOSC 111	Individual, Community, Government	
	and Social Responsibility I	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

**Core Courses (36 credits)**

ACCO 109	Basic Accounting for Non-accountants I	3
3 ACCO 110	Basic Accounting for Non-accountants II	3
MARK 133	Principles of Marketing	3
COIS 201	Data Processing	3
FINA 202	Business Finance	3
MANA 340	Operations Management	3
MANA 204	Business Law and Entrepreneurial	3
MANA 230	Organizational Behavior	3
INBU 350	International Business	3
ENTR 360	Entrepreneurship	3
3 STAT 201	Business Statistics I	3
3 STAT 202	Business Statistics II	3

**Major Courses (18 credits)**

MARK 206	Consumer Behavior	3
MARK 320	Marketing Research	3
MARK 322	Information System for Marketing / E-Marketing	3
MARK 440	Strategic Marketing	3
MARK 450	Marketing Internship Project	3
MARK 455	Marketing	3

**Require Courses (21 credits)**

MARK 220	Social Marketing for Non Profit	3
MARK 306	Sales	3
MARK 330	Retail	3
MARK 400	Service Marketing	3
MARK 402	Integrated Marketing Communications	3
MARK 410	International Marketing	3
MARK 420	Product and Brand Management	3

**BACHELOR'S DEGREE IN BUSINESS ADMINISTRATION WITH CONCENTRATION IN OFFICE TECHNOLOGY MANAGEMENT**

This program provides fundamental information for students and the knowledge of Microsoft applications that is required in the employment market and for management competence. Graduates will be able to develop and design electronic publications and commercial pages on a network. They will also be able to work with portal workflow management to design, develop and maintain virtual projects. This program is unique, as it includes management courses and end-user office technology.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>39</b>
<b>Major Courses</b>	<b>18</b>
<b>Major Options Courses</b>	<b>9</b>
<b>Free Elective Courses</b>	<b>6</b>

**General Education (48 credits)**

FSBE 105	Freshman Seminar	3
ECON 121	Economic Principles and Problems I	3
ECON 122	Economic Principles and Problems II	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
INSC 101	Integrated Sciences I	3
INSC 102	Integrated Sciences II	3
MATH 199	Quantitative Methods	3
PSYC 123	Psychology	3
SOSC 111	Individual, Community, Government	
	and Social Responsibility I	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

**Core Courses (39 credits)**

ACCO 109	Basic Accounting for Non-accountants I	3
ACCO 110	Basic Accounting for Non-accountants II	3
MARK 133	Principles of Marketing	3
OTEM 101	Introduction to Office Technology	
	Systems	3
FINA 202	Business Finance	3
MANA 204	Business Law and Entrepreneurial	3
MANA 340	Operations Management	3
MANA 230	Organizational Behavior	3
MANA 213	Human Resources Administration	3
STAT 201	Business Statistics I	3
INBU 350	International Business	3

ENTR 360	Entrepreneurship	3
MANA 304	Project Management	3

**Major Courses (18 credits)**

OTEM 201	Information Technology	3
OTEM 202	End-User Solutions	3
OTEM 303	Introduction to Database Management	3
OTEM 310	Office Information Management	3
OTEM 404	Training and Development in Office Technology Management	3
OTEM 405	Integrated Applications	3

**Option Courses (9 credits)**

**Electronic Publishing**

OTEM 401	Document Publishing	3
OTEM 402	Web Based Document Publishing	3
OTEM 410	End-User Project	3

**Portal Workflow Management**

OTEM 415	Portal Workflow Management	3
OTEM 416	Electronic Document Management	3
3 OTEM 420	End-User Project Electronic Content Management	3

**Training for "Microsoft Office User Specialist"**

OTEM 425	Microsoft Word and Microsoft PowerPoint	3
OTEM 426	Microsoft Excel and Microsoft Access	3
OTEM 427	End-User Project (MOUS)	3

**Free Elective Courses (6 credits)**

## **COURSE DESCRIPTIONS**

(Courses marked with @ could be offered in both modalities, traditional or on-line.)

### **ACCO 101**

#### **Business Mathematics**

##### **Three Credits**

The course centers on basic mathematics skills to prepare students for accounting and finance courses. This course reviews percentages, simple interest, compound interest, discounts, commissions and proportions.

### **ACCO 109**

#### **Basic Accounting for Non-accountants**

##### **Four Credits**

The course centers on the study of basic accounting concepts and principles with the purpose of understanding their application through the analysis of financial reports. Decision making is considered, based on the knowledge of basic concepts within an ethical framework that includes: the nature of accounting, the structure of financial statements, the accounting cycle, income determination for a merchandising business, register control and valuation of accounts and notes receivable, cash and inventories.

### **ACCO 110**

#### **Basic Accounting for Non-Accountants II**

##### **Three Credits**

The course centers on the study of basic accounting concepts and principles with the purpose of understanding their application through the analysis of financial reports. It focuses on decision-making based on knowledge of fundamental concepts within an ethical framework that includes: nature of the operating assets and their impact on financial reporting; recognition of current liabilities, contingencies and concept of interest; identification, characteristics, importance and effects of long-term debt. Course content includes the shareholders' equity concept, components, characteristics and differences among various types of shares, dividends, classification and impact on cash and equity from shareholders. Content also includes recognition of the fundamentals differences among organizational structures such as corporation, partnership and sole proprietorship.

### **ACCO 111**

#### **Introduction to Accounting I**

##### **Three Credits**

The course introduces the basic principles of accounting theory and practice, emphasizing the sole-proprietorship

form of business. Primary areas of study include the nature of a business, the accounting equation, the theory of debit and credit, preparation of financial statements, adjusting process, the accounting cycle, special journals, accounting for merchandise business, inventory, internal control for cash procedures, and receivables.

### **ACCO 112**

#### **Introduction to Accounting II**

##### **Three Credits**

The course centers on the study of accounting for fixed assets and intangible assets, as well as current liabilities, with an emphasis on the payroll accounting system. The course discusses how partnership and corporations are structured and formed. Cash flow activities reported in the statement of cash flows are described.

### **ACCO 113**

#### **Introduction to Accounting III**

##### **Three Credits**

The course centers on accounting for issuance of common stock, preferred stock, and the items reported in retained earnings. Content includes accounting issues related to the long-term liabilities (bonds, notes payable, and leases). The accounting treatment for investments in debts and stock, and the implications for the company are discussed. Cash flow activities reported in the statement of cash flow are also discussed. Financial statement analysis, and its effect on decision-making is also considered.

### **ACCO 301**

#### **Intermediate Accounting I**

##### **Three Credits**

The course centers on the study of general accepted accounting principles, according to the presentation of accounting information in the financial statement and related notes. Course content includes journal entries, working papers, adjustments, the financial statement, and valuation of assets and liabilities. The course also includes the study of procedures and principles followed in the presentation of the owner's equity and income determination.

### **ACCO 302**

#### **Intermediate Accounting II**

##### **Three Credits**

The course centers on the study of general accepted accounting principles, according to the presentation of accounting information in the financial statement and related notes. Course content includes journal entries, working papers, adjustments, the financial statement, and valuation of assets and liabilities. The course also includes

the study of procedures and principles followed in the presentation of the owner's equity and income determination.

**ACCO 303**  
**Cost Accounting**  
**Three Credits**

The course centers on the study of the roles of accountants in the organization. It emphasizes the contribution of management accountants to the implementation of strategies related to the value chain, control systems and planning. The concept of professional ethics and its potential conflicts is discussed. The course introduces terminology and cost purposes, and emphasizes the relationship of costs and the concept of relevant range. It includes analysis of cost-volume-profit, and presents different methods to calculate it. The course also presents the break-even analysis and the role of collaboration in decision making. The course culminates with the presentation and discussion of the systems, job order and process cost system.

**ACCO 304**  
**Auditing**  
**Three Credits**

The course is a review of accounting theory, auditing procedures, worksheets, internal control and fraud, preparation of financial statements, reports, forms, methods and procedures. Attention is given to the nature and purpose of auditing, auditing standards, professional conduct, auditors' legal liability and the approach followed in performing audits of financial statements. Special attention is devoted to auditors' decision processes in internal control, auditing sampling, and accumulative audit evidence.

**ACCO 305**  
**Income Tax for Puerto Rico I (Individuals)**  
**Three Credits**

The course centers on the study of income tax, its history and its purpose. Topics include the tax laws of Puerto Rico, inclusions and exclusions, and allowable deductions. Practice in filing individual, corporate partnership returns is provided.

**ACCO 306**  
**Accounting Information Systems**  
**Three Credits**

The course centers on the study of concepts, methods and tools used in the design of accounting information systems, and the function of budgeting in the management and control of business activities. Requires laboratory.

**ACCO 307**  
**Auditing II**  
**Three Credits**

Students will study the audit process, focusing on the practical part of procedures and emphasizing Risk Assessment SAS (SAS 104-111). Content includes the planning of the audit using analytical procedures, determination of materiality and risk, internal auditing controls, and fraud. Implementation of the processes of audit cycles in sales and collection, as well as other cycles such as payroll, disbursements, accounts payable, property, plant and equipment, prepaid expenses, accrued expenses and income and expenditure accounts, inventory, notes payable and capital accounts and cash. Finally, students learn about completing the audit process, reviewing contingencies and commitments, issuance of the auditor's report and subsequent events.

**ACCO 308**  
**Accounting Theory**  
**Three Credits**

Students will study accounting theory and its effect on the profession, recent changes in accounting practices, procedures and conflicting points of view. The course includes interpretation and critical analysis of reports, statements and other accounting activities.

**ACCO 310**  
**Forensic Accounting**  
**Three Credits**

This course presents the concept and development of Forensic Accounting (FA) through an analysis of its trends and institutions. Students also learn how research and fraud detection are conducted in this area. To fulfill this objective, each FA crime will be identified and explained; the methodology used to detect these crimes will also be studied. The main topic analyzed involves litigation services provided by accountants through proper evidence management and calculation of commercial damage. The course emphasizes a profound analysis of cyber crime. Students also learn the methodology of correct business valuation. Finally, practical cases are discussed in order to promote understanding of principles, unusual procedures, and relationships of FA.

**ACCO 315**  
**Intermediate Accounting III**  
**Three Credits**

This course provides a critical analysis of generally accepted accounting principles (GAAP), concepts, and theory underlying the preparation of financial statements. Emphasis will be placed on current theory and practice. The

primary concern is with asset measurement and income determination.

**ACCO 320**  
**Federal Taxes I**  
**Three Credits**

Students will study the history and objectives of the federal income tax system. Topics include basic concepts of federal taxes, the various types of federal income tax returns, accounting periods, accounting methods, income computation and method of filling out tax returns.

**ACCO 321**  
**Federal Taxes II**  
**Three Credits**

Students will study taxes on federal income, as well as the regulations applicable to corporations and societies. The course also includes topics related to taxes on inheritances and donations.

**ACCO 340**  
**EDP Auditing**  
**Three Credits**

The course centers on auditing, assurance and internal control, information technology governance, operating systems and networks, data management systems, system evaluation and control, processing financial reporting system, computer-aided audit tools, data structures, revenue and expenditures cycle tests of controls and substantive testing.

**ACCO 350**  
**Computerized Accounting Systems**  
**Three Credits**

This course is designed to teach how the computer can be used as an accounting tool. It is not intended to teach any new accounting concepts, but rather how accounting procedures can be applied through computer applications with the use of a general ledger software package. Also included are modules for accounts receivable and payable, and asset management. In introducing the computer as an accounting tool, students will be given the criteria to evaluate accounting software. Students will learn how to use the computer for both general ledger and subsidiary ledger transactions. General journals and special journals will be used. Most course work will be completed in the computer lab during class hours.

**ACCO 360**  
**Corporate Governance**  
**Three Credits**

This course presents and introduces the student to the corporate world, especially with details of their key players. It includes discussions of the importance of corporate governance for the twenty-first century, rights and obligations, as well as, the legal and ethical challenger to the board of directors. Emphasis is placed on monitoring the implementation and administration management and ensuring the effectiveness of the board of directors. It also presents aspects of corporate governance and international non-profit institutions vis-à-vis the American model.

**ACCO 391**  
**Cost Accounting II**  
**Three Credits**

This course presents the Activity Based cost accounting system and its management, considering design, manufacturing and distribution processes. It includes simple cost accounting using a single indirect cost pool and the five-step decision making process. The course considers master budgets and operating budgets, taking into account the timing advantages and the responsibilities involved in the implementation. The inventory costing using variable, absorption and throughout methods is also part of the course. Strategies and the balanced scorecard in the profitability analysis are emphasized. The course also includes cost allocation and method analysis for different departments.

**ACCO 395**  
**Managerial Accounting I**  
**Three Credits**

The course centers on studying the managerial tools that owners, managers, and investors have in order to make decisions. It includes topics related to managerial accounting and business organizations, cost behavior and cost-volume relationships, measurement of cost, cost management systems, and activity based costing. In addition, it includes relevant information and decision making related to marketing decisions and production decisions.

**ACCO 396**  
**Managerial Accounting II**  
**Three Credits**

This course is the second part of ACCO 395. It provides students with methods to report managerial information to internal users of the firm. Budgeting, standard cost systems, reporting and analyzing performance, management control systems, flexible budget systems, variance analysis are among the contents covered. The student taking this course will acquire a basic understanding of the most commonly

used methods for using information from the firm's accounting and information systems to assist in making important managerial decisions.

**ACCO 402**

**Advanced Cost Accounting**

**Three Credits**

The course centers on the application of principles, systems and procedures of cost accounting, including historic and standard procedures for decision-making.

Puerto Rico are also included. They are FICA Tax, FUTA Tax, and Medicare law.

**ACCO 405**

**Puerto Rico Taxes II**

**Three Credits**

The course centers on the study of the Puerto Rico Income Tax Law regarding corporations and special partnerships. Content also includes Municipality Patents Law, Properties Law, Excise Tax Law, State Unemployment Law, and State Disability Insurance Law. Several federal laws applicable to

**ACCO 406**

**Puerto Rico Taxes III-Corporation & Partnerships**

**Three Credits**

This course presents an introduction to the Puerto Rico Income Tax Law regarding corporations and partnerships. Themes to be covered include the characteristics and differences between the diverse types of entities within a framework of tax law.

**ACCO 420**

**Government and Nonprofit Accounting I**

**Three Credits**

The course includes discussions of the characteristics and types of G&NP organizations. The objectives of G&NP accounting and financial reporting are an essential part of the course. Topics presented include authoritative sources of G&NP accounting principles and reporting standards. In addition: as well as concepts, objectives and characteristics of SLG accounting and financial reporting, characteristics of SLG accounting and financial reporting and the fundamental features of the SLG accounting and financial reporting model. Special attention is given to: general fund and special revenue funds and general fund accounting. The course will help students understand the preparation of the financial statements proper to governmental and nonprofit organizations. A very special subject in the course is the government budgetary perspective, budgetary accounting and reporting, budget comparison schedule or statement of revenues, expenditures, and changes in fund balance, as well as budgetary entries, budgetary planning, control, and evaluation, basic budgetary terminology, budgetary approaches and emphases, and budget preparation constitutes a very special subject in the course.

**ACCO 421**

**Governmental and Nonprofit Accounting II**

**Three Credits**

The course presents the Activity Based cost accounting system and its management considering design, manufacturing and distribution process. It includes simple cost accounting using a single indirect cost pool and the five-

**ACCO 425****State and Local Government Auditing****Three Credits**

The course presents financial reporting, financial reporting entity, general audit considerations, cash, investments, and derivative instruments, revenues and receivables, capital assets, interfund, internal, and intra-fund activity and balances, expenses or expenditures and liabilities, net position and financial statement reconciliation, concluding the audit, and audit reporting.

**ACCO 430****Not For Profit Entities Auditing****Three Credits**

The course is an overview and introduction of audit considerations. It includes general, financial reporting, cash and cash equivalents, contributions received and agency transactions, split interest agreements, investments, property plant and equipment and other assets, debt and other liabilities, net assets, revenues and receivable, audit reports and tax considerations.

**ACCO 450****Advanced Accounting I****Three Credits**

Students will study problems related to partnerships, parent corporations and subsidiaries, selling on consignment, long contracts and consolidated financial statements, foreign operations, concepts of present value, and related accounting theories.

**ACCO 453****Project****Three Credits**

This will be the most important experience in the academic life of students of the bachelor's degree. Students must synthesize and apply knowledge from an accounting perspective in simulated and practical situations in different scenarios. The financial decisions will be inspected from an integral perspective of the variables that affect them and are

step decision making process. The course considers the master budgets and operating budgets taking into account the timing, advantages and the responsibilities in the implementation. The inventory cost analysis using variable, absorption and throughout methods is also part of the course. Strategies and the balanced scorecard in the profitability analysis are emphasized. The course also includes the cost allocation and methods analysis for different departments.

included in the specialty courses. Methodological strategies could include a classroom workshop, a research seminar, an individual or team project or a creative task carried out in a studio, a laboratory or a specific accounting research area.

**ACCO 454****Accounting Internship****Three Credits**

The accounting internship is designed to provide external capstone experience for accounting students. The internship is a mutual agreement between both a student and an organization/employer to gain a unique and practical real world experience. The employer agrees to offer tangible duties and the student agrees to fulfill the duties to the best of his/her abilities. Interns will complete 200 hours of work during the same semester, these may be paid or unpaid. Students will have the opportunity to increase their professional skills, put academic learning into practice, and gain an understanding of the role accounting plays in today's business environment.

**ACCO 455****Advanced Accounting II****Three Credits**

The course includes/understands the study and analysis of problems, related to societies, bankruptcies of companies, trusts, foreign quasiorganizations, operations, personal financial statements and other advanced topics of the financial accounting..

**FSBE 105****Freshman Seminar****Three Credits**

This course will provide students with activities, techniques and academic experiences in terms of the discipline they are studying. Students will be able to identify and develop personal and academic skills to improve their performance.

**COIS 101****Introduction to Computer-Based Systems**

### **Three Credits**

The course is an introduction to computers and electronic data processing. It includes historical development, data organization, storage systems and types of peripheral devices, as well as data input and output. Students are introduced to microcomputer use and applications, wordprocessing, and spreadsheets. Requires laboratory.

### **COIS 102**

#### **Programming Principles**

#### **Three Credits**

The course is a practical and theoretical introduction to basic programming principles. It includes development of logic, as well as the use of flow charts, structured flow charts and pseudo codes. Students will become familiar with editing and compiling programs.

### **COIS 106Hw**

#### **Business Programming in BASIC**

#### **Four Credits**

The course centers on programming principles, emphasizing practical applications in business using BASIC. Structured programming techniques will be developed along with appropriate documentation for the programs, including flowcharts, hierarchy charts, and documentation sheets for the program and its modules. Requires laboratory.

### **COIS 107**

#### **Programming in COBOL**

#### **Four Credits**

The course is an introduction to computer programming in a business environment, emphasizing structural design of programs, development, testing implementation and documentation of common business applications in COBOL. Requires laboratory.

### **COIS 201**

#### **Data Processing Principles**

#### **Three Credits Hours**

The course is an introduction to computerized systems, their uses, and their benefits in Business Administration. Topics include the study of the basic concepts and technical terms in the field of information systems. The course also provides the opportunity for using applications in word processing, spreadsheets and graphics. Requires laboratory.

### **COIS 213**

#### **Advanced Programming in COBOL**

#### **Three Credits**

The course is an introduction to advanced programming techniques in COBOL. Topic discussed are: program design,

module design, sequential and indexed file maintenance table, advanced data structure, character handling, design and production of reports, and program maintenance.

### **COIS 231**

#### **Programming in RPG**

#### **Three Credits**

The course is an overall study of the development cycle of a system, emphasizing the documentation of the present systems. It emphasizes the use of basic and structured tools and techniques to describe processes, data flow, data structures, file design, form design for data gathering, and preparation of reports. Requires laboratory.

### **COIS 240**

#### **Object-Oriented Programming with C++**

#### **Three Credits**

Study of the fundamental concepts and principles of the object oriented programming language. The course emphasizes an individualized style of modular programming, using object programming. It also promotes the use of extensions coding, modules and applications for the development of competitive skills for today's employment market. Requires laboratory.

### **COIS 250**

#### **Systems Analysis and Design**

#### **Three Credits**

The course centers on the study of the systems development cycle, with emphasis on the present system documentation, using the classic tools and techniques as well as the structured ones. It includes the use of these resources for describing processes, data flow, data structures, and design of forms for data gathering and reports. Data gathering activities and information, progress reports, and the transition from analysis to design will also be discussed.

### **COIS 290**

#### **Systems Development Workshop**

#### **Three Credits**

This is a practice course in which student are required to develop a project with a real application. Topics include system analysis, design, programming and implementation of a simple computerized information system.

### **COIS 301**

#### **Programming in FORTRAN**

#### **Three Credits**

The course centers on programming techniques for development of business applications in FORTRAN. The structure and commands of the language are discussed, with emphasis on topics such as alphanumeric constraints, integer and real variables, logical and arithmetic operations, data management, functions, sub-programs and subroutines. Requires laboratory.

### **COIS 350**

#### **Structured Design with Object Programming Applications**

##### **Three Credits**

The course centers on principles of programming, with emphasis on commercial applications using the Visual Basic programming language. The use of object programming techniques and the appropriate documentation that supplements a computer program. Support documentation includes resources such as: TOE's (Task Object Event), flowcharts, hierarchy charts, decision tables, UML's (unified modeling language) and others. The goal of this course is to provide the beginning programmer with complete coverage of all major introductory programming topics. Requires laboratory.

### **COIS 360**

#### **Telecommunications and Computer Networks**

##### **Three Credits**

The course centers on telecommunications and computer networks designed for individuals in the field of computerized information systems. The historical development, as well as the concepts, terminology and modern products related to computer networks are described. The criteria for planning, acquisition and installation of computer networks are emphasized. The course also includes the study of protocols, software, topologies, and products available. Strategies of centralized and distributed processing are compared.

### **COIS 370**

#### **Productivity Programs for Microcomputers**

##### **Three Credits**

Processing, analysis and presentation media and techniques for problem solving using the computer will be studied. The course emphasizes advanced skills dealing with productivity programs, including word processing, spreadsheets, and database application. It also includes the design and development of material for slide presentations, as well as production of graphs or charts using special effects.

### **COIS 390**

### **Programming in PASCAL**

##### **Three Credits**

Students will study the concepts, structures and specific commands of PASCAL, directed at programming business application. Topics discussed include top down design, logical and arithmetic operations, types of structured data, recursion, and file management.

### **COIS 396**

#### **Special Topics in Computer Information System**

##### **Three Credits**

This is an elective course in which students will gain a complete, step-by-step approach for learning the fundamentals of assembly, repairing and troubleshooting computer hardware and software of modern computers. This course maps fully to CompTIA's latest A+ Exam objectives through live experience in class/laboratory lectures and hands on exercises.

### **COIS 410**

#### **Information System for Decision-Making**

##### **Three Credits**

The course centers on the analysis of high-level information systems, which provide quantitative data from one or more internal or external data banks of the organization to facilitate management decision-making. Theoretical concepts are applied to real life through analysis of specific organizational areas. Requires laboratory.

### **COIS 420**

#### **Introduction to Database Management and Design**

##### **Three Credits**

This is an introductory course in which the student will learn the fundamentals of database architecture, database systems and database management systems. Hands-on techniques will be used, with emphasis on how to design, create, organize and manage databases within the development of an application program using rapid application development (RAD) method. Its main focus is on the functions of development, modifying and accessing objects within the relational database. The course will include topics in data modeling, the normalization process, the creation of Entity-Relationships Diagrams (ERD's), the application of database structures as well as the hierarchical and network database models. The course will be complemented with the development of applications using SQL (Structure Query Language), and PL/SQL (Procedural Language/SQL).

### **COIS 421**

### **PL/SQL Programming**

#### **Three Credits**

This is a specialty elective course designed to provide a working introduction to PL/SQL programming within the Oracle RDBMS environment. The course begins with basic relational database concepts, the SQL query language, PL/SQL language fundamentals of block program structure, variables, cursors, and exceptions, object creation, including indexes, tables, triggers, and stored procedures, Oracle Forms, Oracle-supplied packages, SQL\*Loader, SQL developer, dynamic SQL, and object technology. Students will work with real-life projects. Requires laboratory.

### **COIS 422**

#### **Database Application Development**

#### **Three Credits**

This is a specialty elective course, which will provide the student the necessary skills to design and create interactive applications through a graphical user interface in an information system complemented by relational database systems. The use of multiple strategies to support the managerial decision making within the company or business will be emphasized using complex reports, charts, complex forms and queries. The course will be complemented with real world scenario applications in which the student will be able to design, develop and implement an application using a graphical user interface that uses all database objects. The course requires laboratory.

### **COIS 423**

#### **Database Administration**

#### **Three Credits**

This is a major elective course in which the student will be provided with all the necessary tools for the administration, management and development of relational databases. Students will be exposed to the functions and key tasks required as a database administrator in a production environment. They will also have hands-on experience in creating and starting up a database, managing data, implementing security and data integrity measures and granting data access privileges to individual users. Students have the opportunity to learn how to implement database systems in an international environment using national language support; which is provided in the course. Requires laboratory.

### **COIS 425**

#### **Object-Oriented Programming with JAVA**

#### **Three Credits**

The course centers on the study of the principles and fundamental concepts of the programming language JAVA. The course covers the design of well-structured applications

using clear and precise procedures through the use UML. It promotes the effective use of the control structures, and the optimal performance of the operational environment, in applications developed for the Internet. Requires laboratory.

### **COIS 426**

#### **PL/SQL Programming**

#### **Three Credits**

This is a specialty elective course designed to provide a working introduction to PL/SQL programming within the Oracle RDBMS environment. The course begins with basic relational database concepts, the SQL query language, PL/SQL language fundamentals of block program structure, variables, cursors, and exceptions, object creation, including indexes, tables, triggers, and stored procedures, Oracle Forms, Oracle-supplied packages, SQL\*Loader, SQL developer, dynamic SQL, and object technology. Students will work with real-life projects.

### **COIS 427**

#### **Database Application Development**

#### **Three Credits**

This is a specialty elective course, which will provide the student the necessary skills to design and create interactive applications through a graphical user interface in an information system complemented by relational database systems. The use of multiple strategies to support the managerial decision making within the company or business will be emphasized using complex reports, charts, complex forms and queries. The course will be complemented with real world scenario applications in which the students will be able to design, develop and implement an application using a graphical user interface that uses all database objects.

### **COIS 428**

#### **Database Administration**

#### **Three Credits**

This is a major elective course in which the students will be provided with all the necessary tools for the administration, management and development of relational databases. Students will be exposed to the functions and key tasks required as a database administrator in a production environment. They will also have hands-on experience on creating and starting up a database, managing data, implementing security and data integrity measures and granting data access privileges to individual users. Students have the opportunity to learn how to implement database systems in an international environment using national language support; which is provided in the course Requires lab.

### **COIS 430**

## **System Auditing and Security Management**

### **Three Credits**

The course is an introduction to the principles of auditing in computerized information systems. It emphasizes control, types of auditing, auditing techniques and their effective system development. Topics studied include concepts of auditing computing, equipment and operations auditing, security, integrity and privacy of the system. Requires laboratory.

## **COIS 432**

### **Computer Networks Design**

#### **Three Credits**

This specialized course is oriented to local area network design. Students will be able to learn the necessary methodologies for the design of computer-based networks using wired, wireless and optical media. They will learn to use application software in a simulation environment to prevent errors and time loss before the computer network installation. This environment will provide the students a knowledge base for diagnosing and anticipating problems that increase the costs and production loss in the business.

## **COIS 433**

### **Wireless Local Area Networks**

#### **Three Credits**

This course describes the technologies involved in all aspects of a local area network and how personal devices can interact and communicate with each other. Using a practical approach, the students will learn how a wireless device communicates with a wireless network using protocols and a wireless LAN access point. They will learn how to design, install and troubleshoot a wireless LAN network on a safe-based environment, applying device security management.

## **COIS 434**

### **Application Development for Mobile Devices**

#### **Three Credits**

In this course students are initiated to a mobile computing environment. Students will be able to develop tools and applications that access data and information from any device in a network while on the move. The course provides detailed skills for delivering true mobile computing on both the service creation and device fronts. Students are provided a guide through the complex web of acronyms and standards that wireless data runs on. They learn how to detect and diagnose security issues and new emerging technologies.

## **COIS 435**

### **Data Communications and Computer Networks**

#### **Management**

#### **Three Credits**

The course centers on fundamental elements for the management of computer networks and data communication. The course emphasizes skills development for the design and management of modern communication networks, using digital technology. It also utilizes ideal platforms for data transfer and telecommunications, oriented to client-server services and to the management of applications for the information highway. Requires laboratory.

## **COIS 440**

### **E-Commerce Methodology and Technology**

#### **Three Credits**

This course presents the necessary technologies, protocols, and methodologies for the development of e-commerce or e-business. It surveys the various business models that have been introduced in the last few years and analyzes their economic and managerial foundations. The course also covers legal and security issues.

## **COIS 441**

### **Application Development for E-Commerce**

#### **Three Credits**

The course provides the skills and methodologies needed for the development of e-business or e-commerce applications.

## **COIS 442**

### **Portals Integration**

#### **Three Credits**

This course provides knowledge and skills needed to create and deploy portals. It integrates applications using portals.

## **COIS 443**

### **E-Commerce Development**

#### **Three Credits**

This is a capstone course that provides the students the opportunity to plan, design, develop, and deploy an ecommerce site. This course includes setting up and maintaining a website; understanding site structure, presentation, navigation, and content management.

## **COIS 450**

### **Information Systems Development Project**

#### **Three Credits**

The course centers on the application of concepts, principles and practices of systems development and programming techniques in the development of an information system. Project management methodology, scheduling, task control, formal presentations and group dynamics are used to solve system design problems.

Required files are designed and a program to implement the system is developed. Requires laboratory.

### **COIS 470**

#### **Web Applications Programming**

##### **Three Credits**

This course covers planning and development of home pages on the World Wide Web. Techniques for applications written in PHP with database interaction using MySQL are presented, as well as more complex pages than those developed with HTML. Cases studies are discussed and analyzed.

### **COIS 471**

#### **Web Portal Development**

##### **Three Credits**

This is a major course that provide the knowledge and skills to plan, deploy, and manage web portals. The students will learn how integrate application into a portal framework and build web pages.

### **COIS 472**

#### **E-Commerce Object Oriented Programming**

##### **Three Credits**

This course covers business issues related to electronic commerce, such as models for B2B and B2C electronic commerce, electronic payment mechanisms, technology infrastructure, privacy and competitive advantage.

### **ECON 121-122**

#### **Economic Principles and Problems I and II**

##### **Six Credits**

The course covers economic theories and practice: value and price, exchange, distribution, production, employment, national income, international commerce, public expenses, economics cycles, social welfare and the influence of government on the economy.

### **ENTR 360 @**

#### **Entrepreneurship**

##### **Three Credits**

This course provides students the opportunity to apply the basic concepts of small business management using a teambuilding approach with participants from different disciplines. Different aspects for management of a small business will be studied, with emphasis on the formulation of solutions applicable to specific entrepreneurship problems. The preparation of a group project, including strategies and tactics for the development and administration of a small business will be required.

### **ENTR 401**

#### **Identification and Assessment of Business**

##### **Opportunities**

##### **Three Credits**

Students will learn the concepts, techniques, and skills necessary to identify the two approaches to recognize entrepreneurship opportunities. Techniques for feasibility studies, development of a new business, and strategies for firm growth will be presented. In addition, personal characteristics needed to be a successful entrepreneur will be discussed.

### **ENTR 402**

#### **Design and Organizational Structure for SMEs**

##### **Three Credits**

The course is designed to develop capabilities required to manage organizational design and change in organizations, specifically SMEs. The main objective of the course is to introduce students to concepts of organizational theory, including design, change, and conflict, among others. These concepts and techniques of organizational behavior will be applied in the context of SMEs, through an examination of the challenges and characteristics of these firms.

### **ENTR 403**

#### **E-Commerce and Design of Systems and Networks**

##### **Three Credits**

The course provides the principles and practices for the development of e-commerce and network systems design. It will familiarize the student with the basic concepts involved in different types of e-commerce applications.

### **ENTR 404**

#### **Business Development of biotechnology and Industrial Health**

##### **Three Credits**

The course is designed to develop capabilities required to start companies in biotechnology. It also addresses issues on how to manage established companies in bioscience sectors, as well as the transitions from start-up to established company. The students will acquire knowledge on company formation, team building, intellectual property, financing, partnering and regulatory issues in bioscience industries.

### **FINA 202**

#### **Business Finance**

##### **Three Credits**

The course centers on the study of fundamental principles of business finance and their analysis, planning and control functions. It includes discussion of effects of income tax, basic financial ratio earnings, capital budgeting and cost of

capital, interest factor in financial decisions, working capital and assets management.

**FINA 204**

**Money and Banking**

**Three Credits**

The course covers the nature and role of financing, varieties of money, theory of the origin of monetary value, monetary systems, commercial banking, Federal Reserve System, economic policies control, and international commerce.

**FINA 240****Risk and Insurance****Three credits**

Students will study the different types of risk, the methods for dealing with them and, the insurance institution as an instrument for dealing with risk. The course will examine in detail what makes a risk insurable, the different types of insurers and their marketing systems, what factors should be considered in selecting an insurable, the functions and organization of the insurer, the legal principles applicable to the insurance contract, and the main types of insurance contracts.

**FINA 410****Corporate Finance****Three Credits**

The course covers concepts and problems of corporate finance for decision making under conditions of certainty and uncertainty. It examines working capital management and asset pricing, as well as portfolio theories. Topics include capital budgeting, corporate valuation and restructuring, capital structure relevance, and dividend policy.

**FSBE 105****Freshman Seminar****Three Credits**

The course offers students a series activities, techniques and educative experiences to provide them with the means needed to identify and develop personal and learning skills. Students will learn to know themselves and develop self-esteem to accomplish personal and academic success. They will use the computer as a method for the teaching-learning process.

**HURM 400****Safety and Occupational Health****Three Credits**

In this course the students will learn basic concepts of security and occupational regulations and policies. Emphasis will be placed on the analysis and prevention of accidents, and records of industrial accidents. The course also focuses on theories of industrial accident incidence, workers' compensation, functions of the safety and industrial hygiene staff, standards achievement, risk avoidance concepts, industrial accident investigation, information systems, protection systems (security), self protection and first aid, as well as ergonomics, among others.

**HURM 412****Training and Development****Three Credits**

The course covers the importance of training and development to achieve organizational goals. It includes training program design, training needs assessment and development, and identification of the appropriate training. It also integrates learning theories in the design of training programs. The course emphasizes the importance of learning effects on performance. Different training methods, the utilization of technology in training and comparison of methods with their costs, benefits, and characteristics of the learning process are discussed. It includes employee development and performance appraisal. Special topics such as a transcultural training, career management and organizational challenges, such as I skills obsolescence, employee advising and socialization, the balance between work and family, reductions and displacement, as well as retirement issues are also discussed.

**INBU 350 @****International Business****Three Credits**

This course centers on presenting the concepts and administrative implications of international business practices in the area of products and services merchandising all around the world. The course will emphasize the pros and cons of economic theories, government policies, business strategies and the organizational structure of international business.

**INOP 240****Supply Chain Management****Three Credits**

This course covers the major issues in supply chain management, including: definition of a supply chain, role of the purchase process, the relationship between suppliers and customer, ethical issues, resource planning, inventory management, process improvement, location decisions, supply chain integration, and performance and metrics along the supply chain.

**INOP 320****Advance Operations and Production Management****Three Credits**

This course examines the concepts, principles and techniques of operations management and production, which is the main functional area of business. Most of the principles, concepts and techniques discussed apply to a variety of products, including manufactured and nonmanufactured items and a wide variety of services. The course will analyze the transaction process needed, in order to run an efficient and up-to-date business. Other topics included are: operations programming, quality, inventory, reliability and others.

**INOP 401**  
**Statistical Quality Control**  
**Three Credits**

The course provides students with comprehensive coverage of the fundamental concepts of quality control in the manufacturing and service industry. It is designed to introduce students to the principles of management techniques, providing a basis for the use of quality tools, rules and standards in this area of specialization.

**INOP 405**  
**Inventory Control**  
**Three Credits**

As a vital function of an organization's operational structure, effective inventory management is key to improving a company's customer service, cash flow and profitability margin. This course will focus on inventory control tools and techniques, with in-depth coverage of the latest practices in the field. This will provide relevant information involved in day-to-day decisions.

**INOP 409**  
**Management and Physical Distribution**  
**Three Credits**

This course provides general knowledge of theories and management aspects related to logistics management in manufacturing and services sectors. It is divided in three important phases: 1) Introduction to logistics, with a strong focus on production and distribution (essential methods used to obtain a high level of effectiveness and productivity); 2) Discussion of important and relevant aspects with respect to customer service and satisfaction (transportation, warehouse, inventories, purchase order management and procedures) and 3) Detailed studies of management procedures and practices, both domestic and international. Other important methodologies for continuous improvement will also be discussed, such as Six Sigma and Lean Manufacturing, which help to increase productivity and customer satisfaction levels.

**MANA 131**  
**Human Relations in Business**  
**Three Credits**

Students will study personal and interpersonal relationships in the decision-making process. They will analyze the dynamics of leadership and group behavior through discussions of different cases. Labor-management relations in production, communication and sales will also be examined.

**MANA 204 @**  
**Business Law and Entrepreneurial**  
**Three Credits**

The course centers on studying the legal aspects of common ethical behavior that affects business transactions, with emphasis on Puerto Rican legislation. Special attention is given to contracts, sales, and marketable securities, transfer of property, deeds and mortgages.

**MANA 210**  
**Management Theory**  
**Three Credits**

The course centers on traditional principles of business administration compared to new concepts. Students will analyze the management process through discussions of the four basic principles of business administration: planning, organization, administration, and control.

**MANA 213**  
**Human Resources Administration**  
**Three Credits**

The course centers on the study of the theory and application of fundamental principles of human resources management in an enterprise. Topics include the dynamic role of the manager and his/her relationship to personnel. The course also looks at issues in human resources management and their relation to the general objectives of the enterprise.

**MANA 230 @**  
**Organizational Behavior**  
**Three Credits**

In this course, students will learn the basic principles of management: planning, organizing, directing and controlling, incorporating the fundamental concepts of organizational behavior. Management processes will be analyzed by integrating the basic principles. Students will learn how individuals and groups impact behavior within an organization. Includes classical and contemporary theories of organization; interpersonal and organizational behavior, motivation, communication, leadership theories and processes of decision-making. It includes both the theory and practical application of organizational behavior in business. It is a field of systematic study that focuses on improving productivity, quality and helping professionals to develop methods to empower people and to design and implement programs of change, elements of globalization and diversity. Provides guidance to managers in the creation and development of an ethical and healthy working environment.

**MANA 260****Managerial Strategies****Three Credits**

The course centers on the study of special topics and their application to the pharmaceutical industry. The concept of total quality, the importance of internal and external clients, the use of methods and tools to prevent and solve problems will be discussed. The course explains and demonstrates the benefits of implementing a continuous improvement strategy to achieve business and personal goals.

**MANA 300****Ethics in Business****Three Credits**

The course centers on ethical principles involved in the decision-making process in a business environment. The student will be learning concepts related to moral aspects of human behavior within the whole social system, and particularly in business settings or in groups where the individual operates.

**MANA 302****Labor Legislation****Three Credits**

The course centers on the study of the fundamental aspects of labor laws at state and federal levels. Students will analyze the rules governing employer's labor relations, protective labor legislation, personnel law, social security legislation of the labor law and health and safety at work.

**MANA 304****Project Management****Three Credits**

The course centers on everything that a person needs to know in order to work successfully in today's exciting project management environment. Students will learn how to organize as well as how to manage effective project teams, from planning and scheduling to cost management. So as to ensure that students are learning today's best practices, they will revise concepts now closely aligned with the PMBOK (Project Management Body of Knowledge) framework and approach. Coverage of the latest business developments and challenges will acquaint students with issues such as project constraints, stakeholder issues, the project charter, how projects relate to an organization's strategic plan, and much more. Students will learn the keys to effective communication both within and outside of a team. A wealth of new and revised intriguing cases will inspire discussion and debate, while new real world vignettes will give students first-hand insights into how to apply project management in the workplace.

**MANA 306****Government and Business****Three Credits**

The course covers the role of government in the free enterprise system and legislation created to control or regulate commerce.

**MANA 308****Real Estate Management****Three Credits**

The course covers fundamentals of real estate and the essentials of brokerage, financing, mortgages, investments, property administration, and appraisals.

**MANA 316****Small Business Administration****Three Credits**

The course centers on planning, distribution of space and handling of materials, analysis of investments, inventory control, quality control, and the analysis of methods to determine employee efficiency for small businesses.

**MANA 321****Supervision and Leadership****Three Credits**

This course provides a general view of the concepts, methods, and modern supervisory techniques needed to become an efficient business manager. It emphasizes the supervisor's responsibility and authority, and highlights the role and functions of the supervisor. Theory is combined with practical observations, so that the student can become aware of all the fiscal, human and psychological resources that the supervisor must use in order to administer efficiently and effectively.

**MANA 340 @****Operations Management****Three Credits**

The course centers on the study of, planning and control of production facilities and operations. Topics include the use of techniques and models for decisions related to: demand forecasts, product mix, plant location, quality control, inventory control, and the human factor in the production process.

**MANA 395****Total Quality Management****Three Credits**

The course centers on the analysis and discussion of the elements of total quality management and its effect on organizational behavior. The course also provides a review of the effects of total quality management of organizations

in general, the responsibilities of the manager and the behavior of employees in the organization.

**MANA 401**  
**Enterprise Strategy**  
**Three Credits**

This course integrates the knowledge acquired in the first three years of business administration. It includes the strategic study organizations at all stages and their social and environmental impact.

**MANA 404**  
**Labor Relations**  
**Three Credits**

The course presents a multinational approach to labor relations, but places special attention on Puerto Rico. Students will analyze the origins of labor unions in Puerto Rico, as well as labor laws and federal laws related to the island. Arbitration and complaint procedures and the selective analysis of current situations in labor will also be studied.

**MANA 408**  
**International Trade**  
**Three credits**

The course centers on the commercialization process of products and services around the world. It includes fundamental themes of international commerce, such as: marketing of exports, organization of the exporting business, financial bases of the exporting process, market selection and research, strategies to promote products in international markets, legal aspects and support instruments in international commerce, international cargo transportation and insurance, regulative and preferential practices in international commerce, importing techniques and operations, dealing with export documents, and an introduction to the new process of globalization.

**MANA 422**  
**Compensation Management**  
**Three Credits**

The course presents principles and techniques used in the design and the administration of a compensation system. It will include aspects concerning legislation, base pay structure, job evaluation, performance analysis, as well as incentives plans, benefits and services.

**MANA 450**  
**Project**  
**Three Credits**

The course is the most important experience of design for the students, since it interates all the knowledge acquired in different courses. The strategic planning outline is used as an integrative vehicle. The human factor stands out as critical element for the success of the efforts to implant managerial politics. The student can design his/her own company or can serve as an advisor to a company. This experience can be carried out as a workshop, an investigation seminar, an individual or group project, or as a creative task carried out in a studio, a laboratory, a simulator or research field. To develop a company or the task assigned, students must dedicate a minimum of 45 hours during the academic term, supervised by a professor.

**MARK 133 @**  
**Principles of Marketing**  
**Three Credits**

The course centers on the processes involved in the distribution of goods and services from producer to consumer. Students will examine the comprehensive system of marketing, including management-controlled variables: product, price, promotion and distribution. They will also examine external variables such as government, the economy and society. Consumer behavior, modern marketing trends, market definition, placement and information systems, will also be studies, among other topics.

**MARK 134**  
**Introduction to Marketing**  
**Three Credits**

This course is designed to provide a broad introduction to the field and practice of marketing. The student will understand how strategic marketers sell products and/or services. In order to create successful marketing strategies, marketers must take into account the relationship between marketing and external forces. Therefore, students also need to study how consumers think and behave in response to marketing, how other members of the distribution chain (such as retailers or manufacturers) and sellers interact, and how the environment and marketing are mutually affected.

**MARK 135**  
**Retail Sales**  
**Three Credits**

The course centers on an analysis of the theory and practical principles used in organizing and managing retail business. It includes topics such as: the planning and organization of

retail business, merchandise purchasing and handling; sales and promotion, and control of business operations.

**MARK 206**  
**Consumer Behavior**  
**Three Credits**

This course examines important concepts, principles, and theories from the various social sciences in order to describe and explain consumer behavior. Students are encouraged to ask questions and to relate the course material to their own buying experiences and discuss these in class. This course explores how the examination and application of consumer behavior is central to the planning, development, and implementation of marketing strategies.

**MARK 220**  
**Social Marketing for Non Profit**  
**Three Credits**

While community based social marketing (CBSM) is predominantly used to describe the utilization of the marketing process in order to change behaviors related to sustainability and environmental responsibility, the course takes a much more expansive view of CBSM, one that considers marketing as a tool that can be used by business and non-profits for developing communities, both economically and socially.

**MARK 251**  
**Advertising and Promotion**  
**Three Credits**

The course covers basic principles of advertising. Ethics, as well as social and economic problems related to business advertising are considered. Also included are basic principles applicable to promotional copy writing and the selection of the methods used in transmitting information.

**MARK 301**  
**Marketing Management**  
**Three Credits**

The course centers on marketing as a process and analyzes the application of its theories to management. Topics include the role of marketing in organization, development, implementation and control of the marketing plan.

**MARK 305**  
**Personal Selling**  
**Three Credits**

The course covers strategies and tactics applicable to personal selling. Topics emphasized include basic principles of sales, selecting and qualifying prospects, research, selling

techniques, and closing, which will help students achieve success in personal selling of products and services.

**MARK 306**  
**Sales**  
**Three Credits**

The course centers on the study of the foundations of professional selling, such as creating, communicating and delivering value. Initiating, developing and enhancing customer relationships will also be discussed.

**MARK 318**  
**Sales Management**  
**Three Credits**

The course centers on a description of the shift in industry from a production-oriented approach to a consumer-oriented approach. Topics include the role of sales management in a production-oriented firm and a customer-oriented firm; changes in the nature of sales management, and managerial challenges in sales management.

**MARK 320**  
**Marketing Research**  
**Three Credits**

This course examines the fundamentals of marketing research and the integration of statistical programs for gathering and analyzing information in order to support decision making. Students will gain theoretical knowledge and practical skills in research that will add value to the academy and will contribute to existing business solutions. The Students will be ethical in their research. The knowledge gained in this discipline will be useful for finding solutions to problems, and knowing the consumer behavior about preferences for a brand, product, service or business. Students will also learn about developing more effective promotions for a company in a digital world, creating a new products or modifying an existing product, identifying services that may have greater future demand and studying social networks to analyze the digital market.

**MARK 321**  
**Customer Service Management**  
**Three Credits**

Throughout the course the student will gain a comprehensive understanding of the core competencies required for developing and implementing effective customer service. Customer service is increasingly becoming a vital business issue as organizations realize the benefits of an integrated, strategic customer service management system for providing effective customer support management systems. The course also aims to teach

students the importance of planning a CRM strategy, it is essential to focus on the customer's values and to collect information about their requirements and, based on this, to further analyze the relationship between the degree of importance and the degree of satisfaction for each requirement.

**MARK 322**  
**Information System for Marketing / E-Marketing**  
**Three Credits**

Throughout the course the students will apply the advanced features of Microsoft Office programs. Students will prepare different documents such as professional letters, tables, columns, forms and documents that can be used in proposals and presentations to potential customers. They will also learn about the functions of merge and track changes. They will edit documents via the internet and create different versions of a document. In addition, the course will emphasize the characteristics of an effective presentation using other applications such as Prezi, Illustrator, Publisher and, Flash, among others. The course will offer training in advanced skills for the design, creation, editing and printing of worksheets, professional databases and promotional tools. Students will analyze the information for determining the best way to present tables, reports, graphics, databases, pages for publication on the Internet and apply these skills to different cases. The course will integrate other Office applications (Publisher, Adobe, Flash, among many others) and to the Internet and other technologies (Skype). Students will learn how to use different applications of the synchronization process of the Ipad and, tablets with cellular phones for monitoring meetings, sales, following up on customers, orders, among many other functions. Students will obtain the knowledge and basic skills related to the use of technological tools, so that they will be able to perform analysis of sales, plan effective presentations to customers and use, visual communication techniques effectively. The course also examines how the evolution of the marketing and the incorporation of the internet and other technologies have driven change by creating new business strategies and connections with the consumer. The course delves into how the application of the emarketing complies with its function to create, communicate and deliver value to customers. The course will also discuss how proper management emarketing succeeds in establishing relationships with the customers that produce end up with as a result profits for the organization.

**MARK 330**  
**Retail**  
**Three Credits**

This course familiarizes students with the decisions involved in running a retail firm, as well as the concepts and principles for making those decisions. The student will gain an understanding of retailing trends, technology in the industry, merchandise planning and management, pricing, location, promotional strategies, human resource management, store design and layout, customer service, and the international movement of retailers. The course will give students insight into the retailing environment and will allow them to make decisions for effective management. The course also provides a good foundation for those interested in owning or running a small retail business or those interested in pursuing a retail career as a merchandise buyer or store manager.

**MARK 350**  
**International Distribution Channels**  
**Three Credits**

This course provides students with the skills to design distribution channels both domestically and internationally. The distribution channels of companies often represent the main points of contact with end consumers. Having the right partners and their cooperation is critical to the success of the company in acquiring to retaining consumers. Specifically, this course discusses the nature of distribution channels, the importance of using marketing intermediaries, the number of levels, behavior and organization, systems of vertical integration, horizontal integration systems, hybrid systems, marketing, physical distribution and management logistics.

**MARK 355**  
**Sales**  
**Three Credits**

The course centers on the foundations of professional selling, such as creating, communicating and delivering value. It also includes discussion of initiating, developing and enhancing customer relationships.

**MARK 400**  
**Service Marketing**  
**Three Credits**

The course provides a perspective of the Service Marketing focused on service as a product and service to support the product and the application of its principles to the marketing mix. The student will gain the knowledge and practical skills for creating effective strategies in marketing services to meet changing needs, expectations and understanding consumer behavior. Topics include consumer behavior and

positioning in the context of the service, the essential elements in the creation of service, the physical and electronic distribution, as well as pricing and promotion as a tool to educate the consumer. Service marketing and consumer behavior will be studied, as well as the positioning in the context of the service, the essential elements in the creation of the service, the service through physical and electronic distribution channels, and price and promotion in service.

#### **MARK 402**

##### **Marketing Integrated Communication**

###### **Three Credits**

In this course is studied the role of communication in the marketing objectives of an organization is studied. Topic include the nature of communication; marketing resources, effect of society, attitudes and individual preferences in communication; media and the relevance of public relations.

#### **MARK 403**

##### **Product Management**

###### **Three Credits**

The course focuses on the development of new products and on strategies for existing products. The scope and importance of new products will be considered, as well as their objectives and development processes. Emphasis will also be given to the process of change or modification of existing products.

#### **MARK 404**

##### **International Negotiation**

###### **Three Credits**

This multidisciplinary course explores the negotiation from an individual to an international perspective, including both the public and the private sector. Special emphasis is placed on cross-cultural elements which affect both the perception and the levels of the negotiation process. The course explores the context of negotiation, bargaining structure and dynamics (strategies and tactics) to persuade, as well as negotiating to reach an agreement.

#### **MARK 405**

##### **Public Relations Business**

###### **Three Credits**

The course focuses on the importance of public relations in contemporary society and on the application of public relations principles in business, society, economy, culture, politics and education in Puerto Rico. Origins of public relations in the United States and Puerto Rico are discussed. Other topics include the role and traits of public relations professionals, as well as their function in society and business. Ecology, environment and public relations ethics will be discussed. The following topics are also included:

research, planning, use and evaluation of communications media, importance of public opinion, public relations industry and the public, and the use of promotion and advertising.

#### **MARK 406**

##### **Marketing Strategies**

###### **Three Credits**

The course focuses on marketing strategies; by describing present marketing problems, the course provides an opportunity for the development of decision-making skills. Emphasis is placed on products and services, integrated marketing communications, marketing channels and pricing strategies.

#### **MARK 409**

##### **Industrial Marketing**

###### **Three Credits**

The course centers on analyzing methodology and policies in the marketing of industrial products. Topics include distribution channels, pricing and service policy, industrial sales, and purchases.

#### **MARK 410**

##### **International Marketing**

###### **Three Credits**

The course covers the history and basic principles of marketing as applied to international marketing. Emphasis is placed on the cultural, political and legal framework. Topics include managerial considerations, pricing systems and distribution channels.

#### **MARK 415**

##### **Sales Forecasting**

###### **Three Credits**

This course studies different quantitative and qualitative methods to predict the uncertain nature of business in sales, such as moving average, exponential smoothings, time series, simple linear regression, Delphi method, expected value, decision tree diagram and Bayes' theorem.

#### **MARK 420**

##### **Product and Brand Management**

###### **Three Credits**

Brands are one of the most valuable assets of any company. However, many marketing decisions are oriented to pricing, communication or distribution in isolation without considering its impact on the value of the brand. In this course, the marketing strategies are examined from the

perspective of brand strategies and tactics leading to the development of strong brands and maximizing the value of existing brands.

Specifically, brand management includes product management, brand positioning, development and measurement of brand equity over time. Topics include approaches to consumer positioning and brand identity, creating points of difference and competitive advantage, communications and marketing messages, brand development portfolios, sub-brands, line extensions and distribution strategies.

#### **MARK 440**

##### **Strategic Marketing**

##### **Three Credits**

This course will emphasize strategic decision making, specifically on marketing strategy design, implementation, and evaluation. The primary purpose of this course is to apply marketing frameworks and concepts to make strategic decisions that will result in a competitive organization. Marketing concepts will be used in an integrated approach, as the firm's tools to design profitable interactions with its customers and competitors. This course is focused on helping students become strategic marketers, so that they will be able to create, gain support for and execute marketing plans that will build strong and enduring businesses.

#### **MARK 450**

##### **Marketing Internship**

##### **Six Credits**

This course involves students in a work experience related to marketing strategy, in which principles acquired in the classroom will be applied. Strategies in drafting marketing policies at the management level will be studied: organization, demand analysis, product planning, pricing system, logistics and sales promotion. The course will also expose students to actual work situations, which will develop the assurance and self-confidence required in professional life. The experience will also aid students in deciding on a specific area in the marketing field. Requires one hundred and sixty (160) full-time work hours during the semester.

#### **MARK 455**

##### **Marketing Project**

##### **Three Credits**

In this course the student will apply knowledge acquired in the marketing concentration. The student will be able to apply different aspects, such as the role of marketing in the

organization, development, implementation and control of the marketing plan.

#### **OFAD III**

##### **Elementary Spanish Shorthand**

##### **Three Credits**

The course covers the basics of elementary Spanish shorthand. Students will develop shorthand technique through reading and writing of shorthand symbols, including: vocabulary, brief forms, phrasing, as well as frequent word beginnings and word endings. Exercises are provided to emphasize correct language usage. One semester, 4 hours a week.

#### **OFAD 112**

##### **Intermediate Spanish Shorthand**

##### **Three Credits**

This course continues developing shorthand skills, but at a quicker pace, using reading and writing. Knowledge of shorthand is increased with new vocabulary, brief forms, phrasing, letters, as well as frequent word beginnings and word endings. Language usage is emphasized. One semester, four hours a week.

#### **OFAD 113**

##### **English Shorthand**

##### **Four Credits**

This course emphasizes the principles of English shorthand. It introduces pre-transcription skills. Special attention is given to accuracy, spelling and the application of grammatical concepts. Dictation techniques will be developed up to a minimum of 60 words per minute. One semester, five hours a week.

#### **OFAD 121**

##### **Keyboarding**

##### **Three Credits**

The course centers on developing keyboard skills and touch-typing, enabling the student to enter data quickly and precisely in any electronic system. Students are introduced to the ten-key pad. One semester, three hours a week.

#### **OFAD 125**

##### **Accounting for Secretaries**

##### **Three Credits**

This course provides the basics of accounting needed for secretarial work. It includes the following topics: nature and purpose of accounting, basic procedures, internal control, planning, the use and purpose of payroll, and accounting in a service and merchandising enterprise. One semester, three hours a week.

**OFAD 141**  
**Keyboarding and Document Formatting I**  
**Three Credits**

This course emphasizes basic techniques, proper use of the keyboard, proofreading, application of basic skills to horizontal and vertical centering, proofreader marks, and business correspondence. Students will develop speed and accuracy skills. One semester, four hours weekly.

**OFAD 142**  
**Document Formatting II**  
**Three Credits**

The course centers on further development of touch-typing skills. Students carry out exercises to develop speed and precision, outlines, manuscripts with footnotes, tabulation, machine direct composition, memoranda, drafts, envelopes and commercial letters with special notes. Basic techniques and attitudes are emphasized. One semester, 4 hours a week.

**OFAD 205**  
**Office Technology**  
**Three Credits**

This course provides basic concepts and the history of word-processing. It includes an analysis of changes in the organizational structure of the office up to the modern electronic office. The course also provides information on the various professions stemming from word-processing and how this skill relates to other data systems. One semester, four hours a week.

**OFAD 206**  
**Word Information Processing I**  
**Three Credits**

This course provides students with instruction and practice in the use of a word processing program. The student will prepare documents applying the basic and intermediate functions of this program. One semester, four hours a week.

**OFAD 207**  
**Word Information Processing II**  
**Three Credits**

This course offers the student experience in the use of microcomputers through the preparation of documents, as well as through the use of advanced functions of a wordprocessing program. Emphasis will be placed on adapting software for particular jobs. In addition, this course will allow students to maximize their effectiveness with word processing in the business office. One semester, four hours a week.

**OFAD 251**  
**English Transcription**  
**Three Credits**

This course continues the review of Gregg shorthand principles. Emphasis is placed on transcription skills and the proper use of grammar to produce correspondence in English. One semester, four hours weekly.

**OFAD 261**  
**Spanish Transcription**  
**Three Credits**

This course integrates typing, shorthand and language skills for a gradual development of transcription ability. One semester, three hours a week.

**OFAD 280**  
**Records Management**  
**Three Credits**

This course provides students with the necessary knowledge to organize and maintain document management and filing systems. This knowledge will enable students to work effectively in offices that have centralized or decentralized systems for document management. One semester, three hours a week.

**OFAD 281**  
**Office Systems and Procedures**  
**Three Credits**

This course provides students the opportunity to enhance knowledge acquired from previous courses. It also develops in students a sense of the responsibilities of working as an office administrator and the ability to solve problems in an office or business environment.

**OFAD 282**  
**Office Management**  
**Three Credits**

This course provides students of office management with situations to which office personnel are exposed to and teaches them how to face them. It develops in students the competencies required to manage diverse office situations. It presents basic management processes and principles. Topics related to the selection, motivation, and evaluation of office personnel, as well as duties and responsibilities are also discussed. Topics related to office automation, its impact on the personnel and the budget are reviewed.

**OFAD 286**  
**Machine Transcription**  
**Three Credits**

The students will learn how to work with dictation and transcription systems. Students will also strengthen English language skills through practice in listening, punctuation, grammar, vocabulary and proofreading. One semester, four hours a week.

**OFAD 307**

**Computer Software Applications**

**Three Credits**

This course covers different technological phases in the application of microcomputers. It is designed to enable students to apply computerized programs, such as: spreadsheets, record management, databases, telecommunications, and desktop publishing.

**OFAD 381**

**Business Internship (Associate Degree)**

**Four Credits**

The business internship offers students the opportunity to demonstrate the skills acquired throughout their courses in the office administration majors. This course requires a minimum of sixteen (16) hours a week of practice in a private or government office, and one hour a week of seminar. The site supervisor and the internship coordinator will be in charge of the performance evaluation. One semester.

**OFAD 382**

**Business Internship (Bachelor's Degree)**

**Four Credits**

This course requires a minimum of sixteen (16) hours a week of practice in a private or government office, and one hour a week of seminar. Integration of classroom training with on-the-job experience will allow the students an opportunity to participate in daily business applications related to their professional careers. The site supervisor and the internship coordinator will be in charge of the performance evaluation. One semester.

**OTEM 101**

**Introduction to Office System Technology**

**Three Credits**

The course introduces the student to basic computer concepts, the Internet as a technological resource, electronic mail and the importance of the different applications. It will familiarize the student with the basic concepts of information retrieval, as well as basic concepts in electronic prosecution of data. Emphasis will be placed on handling of computers.

**OTEM 201**

**Information Technology**

**Three Credits**

This course will develop different input technologies: digital image, scanning, speech recognition, electronic communication, and information processing.

**OTEM 202**

**END-USER SOLUTIONS**

**Three Credits**

This course introduces three of the most important office applications: Word Processing, Excel, and PowerPoint. By the end of the course the students will know how to use the office applications to create documents, such as reports, spreadsheets, and PowerPoint presentations. The exercises focus on the most common skills that every computer user needs for proficiency.

**OTEM 303**

**Database Management**

**Three Credits**

The course provides the concepts, advanced techniques, and skills necessary in the process of relational databases, analysis and design. It is intended to offer the necessary tools for maintaining and managing information. The student will learn how to analyze information and present it in table reports, forms, and queries. The basics of SQL programming are introduced.

**OTEM 310**

**Office Information Management**

**Three Credits**

This course develops the competencies needed to administer any type of office. Processes and basic administrative principles and topics are presented, such as: administration of documents using the rules promulgated by ARMA (Association of Records Managers and Administrators, Inc.), ethical aspects and social responsibility, efficient work and time management, the importance of ergonomics in the office environment, and relevant information for the selection of office personnel. Also included are motivation techniques and employee selection.

**OTEM 401**

**Document Publishing**

**Three Credits**

This is an introductory course that will acquaint students with graphic design technique, principles of page layout and design, and desktop publishing terminology and applications. Students will create a variety of documents such as flyers, brochures, newsletters, and business cards. This course will assist students in producing documents that

communicate effectively through good design and application of basic concepts of desktop publishing.

#### **OTEM 402**

##### **Web-Based Document Publishing**

##### **Three Credits**

The course is designed to enhance skills and knowledge of the professional web author by using cross-platform HTML editor for creating and managing Web sites and pages. The student will use a variety of techniques and tool activities designed to develop pages for the commercial/professional web developer standard. The student will design, develop and manage navigation of the Web sites and Web pages.

#### **OTEM 404**

##### **Training and Development in Office Technology Management**

##### **Three Credits**

Learning theories and instructional development in education are applied to the training of employees in the use of office systems. The following material will be covered: employee and business needs, selection of instructional strategies, and conducting training, as well as conducting follow-up re-training.

#### **OTEM 405**

##### **Integrated Applications**

##### **Three Credits**

In this course students will integrate Microsoft Office Applications. The software to be covered is Word, Excel, PowerPoint, Access and Outlook. During the course students will apply knowledge and skills acquired in word processing, spreadsheet, electronic presentations and databases. Students will apply Internet options, including e-mail. Students will also apply critical thinking to solving problems.

#### **OTEM 410**

##### **End-User Project**

##### **Three Credits**

In this course simulations will allow students to apply skills acquired in previous courses and see them come together in developing site projects. The methodology facilitates collaborative learning. Emphasis is placed on projects, simulations and case studies that challenge and sharpen learners' problem-solving skills, providing an opportunity for students to gain practical experience in web design environments.

#### **OTEM 415**

##### **Portal Workflow Management**

##### **Three Credits**

This Web Content Management course provides some principles and practices for designing, developing, and maintaining web-based projects of all sizes and for all audiences. The content management strategy is unique, because it combines three critical components: processes, technology, and people.

#### **OTEM 416**

##### **Electronic Document Management**

##### **Three Credits**

The course clearly defines and simplifies the principles of document engineering and management. It presents the proven techniques and methods for planning, building, and maintaining automated systems (EDMS) for fast and efficient storage and retrieval of documents and forms.

#### **OTEM 420**

##### **Electronic Content Management End-User Project**

##### **Three Credits**

Students will apply concepts, principles and system design practices, as well as programming techniques for the development of applications in the engineering and administration of documents. The course includes file design and programming for the implementation of the (EDMS) and (CMS) system. Requires laboratory .

#### **OTEM 425**

##### **Microsoft Word/Microsoft PowerPoint**

##### **Three Credits**

In this course students will apply the advanced functions of Word and PowerPoint. Students will prepare different types of letters, tables, columns and forms. They will apply the following functions: merge, track changes, Internet document editing, and different versions of a document. In PowerPoint, students will develop well-formatted electronic presentations. At the end of the course, students will be prepared to take Microsoft Word and PowerPoint Certification exams.

#### **OTEM 426**

##### **Microsoft Excel & Microsoft Access**

##### **Three Credits**

The course provides advanced techniques needed to design, create, edit, print and publish professional-quality electronic spreadsheets and databases on the Internet/Intranet. Students will learn how to analyze information and present it in table format and in charts. Topics include database management, web pages, and macro programming capabilities. Macros will be created using Visual Basic. The course prepares students to take the Microsoft Office User Specialist or Microsoft Access Expert exams.

#### **OTEM 427**

### **End-User Project (MOUS)**

#### **Three Credits**

This course prepares students for the Microsoft Office User Specialist (MOUS) exam. Simulations are offered in each of the Microsoft applications to test the knowledge acquired, thus reinforcing skills. Multiple methods for each of the tasks on the examination are provided.

### **QUME 1016**

#### **Introduction to Quantitative Methods**

#### **Three Credits**

This is a basic mathematics course for business administration students. The course includes: fundamental operations with natural and cardinal numbers, fractions, and decimals; ratios and proportions; percentages, algebraic expressions, and linear equations, as well as applications for simple and compound interest.

### **QUME 202**

#### **Quantitative Methods ADMI**

#### **Three Credits**

The course is an introduction to quantitative methods for business administration students. It includes: fundamental operations with real numbers, linear equations, solutions to systems of equations, and linear inequalities. Students are introduced to concepts of quantitative analysis,

mathematical models and tools, linear programming, and applications to aid in problem solving and practical decision-making.

### **STAT 201**

#### **Business Statistics I**

#### **Three Credits**

This is an introductory statistics course dealing with frequency distribution, presentation of statistical data, measure of central tendency, and dispersion. The concept of probability, as well as probability distributions used commonly in business analysis will be emphasized.

### **STAT 202**

#### **Business Statistics II**

#### **Three Credits**

Students will study sampling distributions, estimating with internal validity, hypothesis testing, analysis of variance, simple regression and correlation, decision analysis, and techniques of quality control. Chi-square and other nonparametric tests are also studied.

commitment and great sense of pride and responsibility in our role as educators is indicative of the core values sustained by the School of Education.

## VISION

In collaboration with the broader Universidad Ana G. Méndez-Recinto de Gurabo community and the professional community in school districts, the School of Education seeks to prepare professionals who are able to meet the challenges of education in a global society that is changing, diverse, and technologically oriented.

The School of Education will provide a high quality, studentcentered and innovative environment to prepare reflective, collaborative and highly effective educational leaders who can address the needs of students and communities in Puerto Rico and abroad.

The Undergraduate Education Program, conscious of its responsibility for improving the quality of education, provides teacher candidates with a solid preparation in the field of education, as well as with the academic background needed to enhance their general professional competence and their teaching skills.

## MISSION

The School of Education is committed to developing reflective, collaborative and highly effective educational leaders. We view teaching both as an art and as a science, learning as a reciprocal process, and service as a responsibility. Thus, we provide a learning environment that promotes individual creativity and fosters the synthesis of theory and practice. We facilitate the development of leaders who are sensitive to individual differences, to moral and equity issues and who, in their work as educators, will actively shape educational organizations.

The School of Education offers Bachelor's Degree programs in Elementary Education, Secondary Education, Special Education and Physical Education. The School of Education serves a diverse student body at the undergraduate and graduate levels on campus, off campus, and at several sites in the United States. We regard the diversity of our many units as a strong point, which adds value to our identity.

The School of Education has a tradition of providing an educational environment that is conducive to interaction, innovation, reflection and service. The essence of our School is its people. From faculty and staff, students and alumni to community partners in private and public schools, the intense

## SCHOOL OF EDUCATION

### In carrying out our mission, we value:

- Excellence and innovation in teaching and learning
- Integration of pedagogical theory and practice
- Professional and personal integrity and responsibility
- Creativity and the development of significant projects that serve as examples in our field
- Active construction and application of knowledge
- A culture that stresses intellectual stimulation, academic excellence and personal dignity
- Teamwork and collaboration with schools, districts, institutions of higher education and organizations in Puerto Rico and abroad
- A sense of community that is fostered by pride in the accomplishments of each of its members and programs

## SPECIALIZED ACCREDITATIONS



Teacher preparation programs are accredited by the Council for the Accreditation of Educator Preparation (CAEP).

### The objectives of the Division of Undergraduate Education are to enable students to:

1. Understand the importance of the social and personal mission of the teaching profession.
2. Accept changes that will lead to a broadening of their knowledge and experience as teachers and the capacity to use that knowledge effectively in the teachinglearning process.
3. Analyze social, psychological and philosophical foundations of education.
4. Choose and effectively use resources and materials to improve their teaching methods.
5. Understand and use different educational strategies and techniques effectively.

6. Be exposed to a variety of experiences that will help them to develop the skills, attitudes and abilities needed to become agents of change in the field of education.
7. Develop awareness of the responsibility of keeping abreast in their fields of specialization.
8. Understand, revise and enrich the curriculum in their area of specialization.
9. Be able to incorporate technological innovations into their personal lives and their teaching.
10. Develop the skills that will make them lifelong learners.
11. Understand and use the Standards for Excellence in Teaching and the constructivist approach.

### **PROGRAM OF PHYSICAL EDUCATION, SPORTS STUDIES AND MOVEMENT**

The Program of Physical Education, Sports Studies and Movement is committed to the development of competent physical education teachers, as well as athletics programs, health-related programs, and student services.

Strong efforts are centered on providing the teacher candidate with the scientific foundations, sports skills and historical perspective of this field, within the general objectives of education.

The intercollegiate, intramural and community services programs are an integral part of the Program, promoting effective management of physical facilities, as well as of economic and human resources. This integration provides an excellent experience in the development of a complete professional in this field.

The objectives of the Physical Education Program are to enable the student to:

1. Develop professional knowledge of the current tendencies and developments in physical education.
2. Analyze the legal framework that regulates the physical education field.
3. Develop techniques, strategies, and procedures in evaluation applied to physical education.
4. Develop policies and educational programs in adapted physical education.
5. Develop techniques, procedures, and administrative practice in the administration of physical education, recreation and interschool competition.
6. Help to improve the quality of life for society.
7. Promote students' use of computers and audio-visual equipment in the process of teaching physical education and in the management of sports events.

8. Develop the theory, conceptual knowledge, technical skills, and attitudes needed to become an effective physical education teacher.
9. Develop knowledge of the scientific foundations of physical education and sports.

### **FACULTY**

**Adlin Solá-Candelario** / Assistant Professor  
MEd, Universidad del Turabo

**Angel M. Ginorio-Martínez** / Assistant Professor  
EdD, Northcentral University

**Angela Candelario-Fernández** / Professor  
PhD, Fordham University

**Carlos Guzmán** / Instructor  
MA, Caribbean University

**David Méndez** / Associate Professor  
PhD, New York University

**Debbie A. Quintana-Torres** / Professor  
EdD, University of Puerto Rico

**Dennis E. Cumpiano-Carrero** / Associate Professor  
MA, New York University

**Dulcinea Nuñez-Santos** / Professor  
EdD, Fordham University

**Edna M. Oyola-Nuñez** / Associate Professor  
EdD, Universidad Interamericana de Puerto Rico

**Elaine Guadalupe-Ahedo** / Assistant Professor  
EdD, Pontificia Universidad Católica de Puerto Rico

**Evelyn Castro-Silva** / Assistant Professor  
MA, Universidad Metropolitana

**Gladys Betancourt-Santos** / Professor  
EdD, Universidad Interamericana de Puerto Rico

**Israel Rodríguez-Rivera** / Instructor  
MEd, Pontificia Universidad Católica de Puerto Rico

**Juan M. González-Lamela** / Professor  
EdD, Nova University

**Juana A. Mendoza-Claudio** / Associate Professor

EdD University of Massachusetts, Amherst

**Luis A. Mondríguez-Torres** / Associate Professor  
DBA, Northcentral University

**Luis V. Dieppa-Roque** / Assistant Professor  
MS, Herbert Lehman College

**Lymari Candelario-Piñeiro** / Assistant Professor  
EdD, Universidad Interamericana de Puerto Rico

**Mayra Jiménez-Ramírez** / Assistant Professor  
MS, Universidad de Puerto Rico

**Olga Espinosa-Dávila** / Associate Professor  
MA, Universidad de Puerto Rico

**Pedro Rivera-Villegas** / Associate Professor  
PhD, Southern Illinois University

**Pilar Dávila-Santos** / Assistant Professor  
EdD, Universidad Interamericana de Puerto Rico

**Rafael Cartagena-Rodríguez** / Professor  
EdD, Nova University

**Sayra Maldonado** / Instructor  
MA, Universidad de Puerto Rico

Strength and Conditioning Association (NSCA) and the American Council on Exercise (ACE).

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>21</b>
<b>Core Courses</b>	<b>39</b>

<b>General Education Courses</b>		<b>(21 credits)</b>
FSED 105	Freshman Seminar	3
SPAN 155N	Introduction to Writing/Reading	3
ENGL 154N	Basic Communicative English	3
SPAN 250N	Writing Techniques	3
ENGL 155N	Advanced Communicative English	3
MATH 120E	Introductory Algebra Enhanced	3 MATH
120EL	Introductory Algebra Enhanced Lab	0 INSC 101N
Integrated Natural Sciences I		3

<b>Core Courses</b>		<b>(39 credits)</b>
EDUC 171	Human Growth and Development	3
PERT 102	Introduction to Sport Massage Technics	3
PERT 103	Programs for Multiple Exercise	3
PERT 104	Strategic Management for the Personal Trainer	3
PERT 105	Advance Evaluation and Management of Athletic Injuries	3
PERT 106	Design Programs for Cardiovascular and strength training	3
PERT 107	Special Exercise Program Design	3
PERT 108	Analyzes of Current Issues Personal Training	3
PERT 109	Clinical Practicum in Personal Training	3
SPRT 102	Methodology for Training	3
SPRT 106	Fundamental Analyses of Sport Movement	3
PHED 220	Human Anatomy and Exercise Physiology	3
PHED 210	Health, Hygiene and Nutrition	3

## PROGRAMS OF STUDY

### ASSOCIATE DEGREE IN PERSONAL TRAINING

The Associate Degree in Personal Training is a program that provides professional formation to future trainers, sports leaders working in sports leagues or community organizations, or parents of athletes. The program facilitates the development of candidates competencies towards an effective role, ethical behavior and an understanding of the need for equity and inclusion in the field of physical training. The learning experience is supported by the acquisition of a theoretical (science) and practical (physical activity) framework of the required content, so that the candidate will become competent as a trainer, based on an ethical and behavioral code. The code is based on the social responsibility of protecting the safety and well-being of persons participating in different personal and training programs, as well as the defense of each participant's rights. The program is guided by the regulations for trainer studies of the National

### ASSOCIATE DEGREE IN SPORTS TRAINING

The Associate Degree in Sport Training is a program that provides professional formation to future trainers, sports leaders working in sports leagues or community organizations, or parents of athletes. The program facilitates the development of candidates' competencies towards an effective role, ethical behavior and an understanding of the need for equity and inclusion in the sports. The learning experience is supported by the acquisition of a theoretical (science) and practical (physical activity) framework of the required content, so that the candidate will become competent as a trainer, based on an ethical and behavioral

code. The code is based on the social responsibility of protecting the safety and well-being of persons participating in different sports programs, as well as the defense of the athlete's rights. The program is guided by the regulations for the initial and sport development levels of trainer studies of the American Sport Education Program (ASEP) and the National Association of Sport and Physical Education (NASPE) in the United States, as well as the Aligning a European Higher Education Structure in Sport Science (AEHESIS) in Europe.

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>21</b>
<b>Core Courses</b>	<b>12</b>
<b>Concentration Courses</b>	<b>27</b>

<b>General Education Courses</b>		<b>(21 credits)</b>	
FSED 105	Freshman Seminar	3	
SPAN 155N	Introduction to Writing/Reading	3	
ENGL 154N	Basic Communicative English	3	
SPAN 250N	Writing Techniques	3	
ENGL 155N	Advanced Communicative English	3	
MATH 120E	Introductory Algebra Enhanced	3	MATH
120EL	Introductory Algebra Enhanced Lab	0	INSC 101N
	Integrated Natural Sciences I	3	

<b>Core Courses</b>		<b>(12 credits)</b>	
EDUC 171	Human Growth and Development	3	PHED
220	Human Anatomy and Exercise Physiology	3	
PHED 222	Swimming and First Aid	3	
PHED 355	Evaluation and Research in Physical Education	3	

<b>Concentration Courses</b>		<b>(27 credits)</b>	
SPRT 101	Sport Pedagogy	3	
SPRT 102	Methodology for Training	3	
SPRT 103	Physiology for Sport Fitness Performance	3	
SPRT 104	Methodology of Physical Training	3	
SPRT 105	Philosophical and Ethical Principles for Coaches	3	
SPRT 106	Fundamental Analyses of Sport Movement	3	
SPRT 108	Sport Management for Coaches	3	
SPRT 109	Concepts of Sport Psychology	3	
SPRT 110	Sport Coaching Practicum	3	

## ASSOCIATE DEGREE IN SIGN LANGUAGE INTERPRETATION

The Associate Degree in Sign Language Interpreting will be the first academic program at this level in Puerto Rico. The Program will provide theoretical, academic and technical training to those students desiring to pursue a degree in interpreting for the deaf. It includes classroom lectures, laboratory practice skills and field experience in the deaf and

hearing community. The structure of the program provides for the students to have opportunities for incidental learning. The program is focused on the student who does not have an academic degree and is interested in developing sign language and interpreting skills to work in immediate settings such as education, vocational and community settings. The program includes courses in liberal arts, which are important for the students to be able to interpret in any setting.

<b>Total Credits</b>	<b>66</b>
<b>General Education Courses</b>	<b>27</b>
<b>Core Courses</b>	<b>36</b>
<b>Electives Courses</b>	<b>3</b>

<b>General Education Courses</b>		<b>(27 credits)</b>	
FSED 105	Freshman Seminar	3	
SPAN 155N	Fundamentals of Reading and Writing	3	ENGL
154	Basic Communicative English	3	ENGL 155
	Advanced Communicative English	3	
MATH 120E	Introductory Algebra Enhanced	3	MATH
120EL	Introductory Algebra Enhanced Lab	0	
HUMA 115	Western Civilization I	3	HUMA 116
	Western Civilization II	3	INSC 101N
	Integrated Natural Sciences I	3	HIST 253N
	History of Puerto Rico Compendium	3	

<b>Concentration Courses</b>		<b>(36 credits)</b>	
SIGN 102	Sign Language I: Foundations, Spelling and Numbers	3	
SIGN 106	Visual gestural communication and Classifiers	3	
SIGN 103	Sign Language II: Conversations	3	
SIGN 104	Sign Language III: Narratives	3	
SIGN 121	Historic & Socio-culture Aspects of the Puerto Rican Deaf Culture	3	
SIGN 122	Sign Language Discourse	3	
SIGN 203	Introduction to Sign Language Interpreting	3	
SIGN 302	Ethical and Professional Principles in Interpreting	3	
SIGN 400	Simultaneous Interpretation	3	
SIGN 401	Interpretation Internship I	3	
SIGN 407	Educational Settings Interpretation	3	
SIGN 416	Psychosocial Aspects of Deafness	3	

<b>Elective Courses</b>		<b>(3 credits)</b>	
SPED 315	Teaching Exceptional Children Interpreting Idioms and Culture	3	SIGN 405

## ASSOCIATE DEGREE IN INFANTS AND TODDLERS

The Infants and Toddlers Associate Degree is a program designed for the preparation of professionals that will work in child care centers for infants and toddlers, and Early Head Start centers. The program offers professional formation so that graduates can provide services in compliance with the appropriate practices and quality standards regarding early

child development. The process will be centered on the acquisition of knowledge, skills and attitudes toward the relationships among the social, physical, emotional, linguistic, creative and cognitive developmental dimensions of typical and atypical children. The program will provide future professionals with the tools that they will use in the field to help children develop the required skills to be successful in their real-world settings and eventually in school.

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>18</b>
<b>Professional Courses</b>	<b>15</b>
<b>Core Courses</b>	<b>27</b>

**General Education Courses (18 credits)**

FSED 105	Freshman Seminar	3
SPAN 155N	Fundamentals of Reading and Writing 3 ENGL 154N	3
	Basic Communicative English 3 MATH 120E	3
	Introductory Algebra 3 MATH 120EL	3
	Introductory Algebra Lab 0 INSC 102N	3
	Integrated Sciences I 3 HIST 253N	3
	History of Puerto Rico 3	

**Professional Courses (15 credits)**

ITAD 106	Introduction to Infants and Toddlers	
	Education	3
ITAD 302	Health, Security, Hygiene and Nutrition:	
	Axes in Early Intervention	3
ITAD 308	Family and Community: Bridges for the	
	Infant and Toddler Formation	3
ITAD 401	Clinical Experiences Seminar	3
ITAD 403	Creation and Management of Environment	
	for Infants and Toddlers	3

**Core Courses (27 credits)**

ITAD 173	Educational Psychology Cognitive an Physical	
	Development in the Infant and	
	Toddler	3
ITAD 174	Child Development II: Social and Emotional	
	Aspects	3
ITAD 222	Second language development in infants and	
	toddlers	
ITAD 225	Methodology to design developmental	
	environments for infants and toddlers	3
ITAD 339	Inclusion Practices in Infants and Toddlers	
	Developmental Programs	3

ITAD 355	Observation techniques for the assessment	
	of infants and toddlers	3
ITAD 363	Curriculum for Infants and Toddlers	3
ITAD 440	Practice at Toddler's Developmental	
	Environments	3
ITAD 441	Practice at infants' development	
	environments	3

**BACHELOR'S DEGREE IN ELEMENTARY EDUCATION WITH CONCENTRATION IN PRESCHOOL EDUCATION**

This bachelor's degree program prepares innovative future teachers at the preschool level. Graduates will be prepared to design learning environments that will stimulate children's interest in discovering and learning from a very early age.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>51</b>
<b>Major Courses</b>	<b>24</b>

**General Education Courses (48 credits)**

FSED 105	Freshman Seminar	3
ENGL 154	Basic Communicative English	3
ENGL 155	Advanced Communicative English	3
ENGL 223	Reading & Writing Compendium	3
HUMA 115	Western Civilization I	3
HUMA 116	Western Civilization II	3
HIST 253	History of Puerto Rico (Compendium)	3
HIST 273	History of the United States of America	3
INSC 101	Integrated Sciences I	3
INSC 102	Integrated Sciences II	3
MATH 120	Introductory Algebra	3
SOSC 103	Integrated Social Sciences I	3
SOSC 104	Integrated Social Sciences II	3
SPAN 155	Fundamentals of Reading and Writing/ Introduction to Reading	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

Placement in Spanish and English freshman courses will be determined by CEEB examination scores and/or entrance diagnostic tests.

**Core Courses (51 credits)**

EDUC 106	Introduction to Education	3
EDUC 171	Human Growth and Development	3
EDUC 172	Educational Psychology	3
EDUC 205	Sociological Foundations of Education	3

EDUC 214	Computers in Education	3
EDUC 276	Classroom Management	3
EDUC 355	Evaluation and Measurement of	
	the Educational Process	3
EDUC 356	Practicum Seminar	1
EDUC 363	Curriculum Planning & Design	3
EDUC 401	Clinical Experiences Seminar	3
EDUC 420	Philosophical Foundations of Education	3
EDUC 435	Interdisciplinary Seminar	3
EDUC 436	Pedagogical Integration Seminar	3
EDUC 441	Practicum Teaching in Preschool	5
SPED 315	Teaching Exceptional Children	3

		3
COMS 104	Community Service	
PHED 210	Health, Hygiene and Nutrition	3

**Major Courses (24 credits)**

EDUC 123	Creative Expressions in Children PK-6	3
EDUC 202	Teaching Department g Materials and Learning Devices	3
EDUC 219	Perceptual Motor Development in Preschool and Primary Education	3
EDUC 225	Methods for Teaching from Preschool to Third Grade	3
EDUC 319	Theory, Practice and Assessment of Play Activities in Early and Primary Education Programs	3
EDUC 322	Language Development and Correction of Speech Difficulties in Preschool & Primary Grades	3
EDUC 323	Literature for Children from Preschool to Sixth Grade	3
EDUC 403	Administration of Preschool and Early Childhood Programs	3

**BACHELOR'S DEGREE IN ELEMENTARY EDUCATION WITH CONCENTRATION IN PRIMARY EDUCATION (K-3)**

The bachelor's degree program prepares innovative future teachers at the Kindergarten to third grade level. Graduates will be prepared to design learning environments that will promote the acquisition and development of fundamental concepts and skills at this academic level.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>51</b>
<b>Major Courses</b>	<b>24</b>

<b>General Education Courses (48 credits)</b>	
FSED 105	Freshman Seminar 3
ENGL 154	Basic Communicative English 3 ENGL 155
	Advanced Communicative English 3 ENGL 223
	Reading and Writing Compendium 3 HUMA 115
	Western Civilization I 3 HUMA 116
	Western Civilization II 3
HIST 253	History of Puerto Rico (Compendium) 3
HIST 273	History of the United States of America 3

INSC 101	Integrated Sciences I	3
INSC 102	Integrated Sciences II	3
MATH 120	Introductory Algebra	3
SOSC 103	Integrated Social Sciences I	3
SOSC 104	Integrated Social Sciences II	3
SPAN 155	Fundamentals of Reading and Writing/Introduction to Reading	3
SPAN 250	Writing Techniques	3
SPAN 255	Reading and Writing	3

Placement in Spanish and English freshman courses will be determined by CEEB examination scores and/or entrance diagnostic tests.

**Core Courses (51 credits)**

EDUC 106	Introduction to Education	3
EDUC 171	Human Growth and Development	3
EDUC 172	Educational Psychology	3
EDUC 205	Sociological Foundation of Education	3
EDUC 214	Computers in Education	3
EDUC 276	Classroom Management	3
EDUC 355	Evaluation and Measurement of the Educational Process	3
EDUC 356	Practicum Seminar	1
EDUC 363	Curriculum Planning and Design	3
EDUC 401	Clinical Experiences Seminar	3
EDUC 420	Philosophical Foundation of Education	3
EDUC 435	Interdisciplinary Seminar	3
EDUC 436	Pedagogical Integration Seminar	3
EDUC 443	Practicum Teaching Elementary School Practicum	5
SPED 315	Teaching Exceptional Children	3
PHED 210	Health, Hygiene and Nutrition	3
COMS 104	Community Service	3

**Major Courses (24 credits)**

EDUC 123	Creative Expressions in Children PK-6	3
EDUC 202	Teaching Materials and Learning Devices	3
EDUC 206	Teaching Reading in Grades K-3	3
EDUC 207	Teaching Writing in Grades K-3	3
EDUC 213	Mathematics and Science: Age of Discovery PK-3 Grade	3
EDUC 208	Critical Thinking Skills and the Teaching of Social Studies in Elementary School	3
EDUC 322	Language Development and	

	Correction of Speech Difficulties in Preschool and Primary Grades	3
EDUC 323	Literature for Children from Kinder to Sixth Grade	3

**BACHELOR'S DEGREE IN ELEMENTARY EDUCATION  
WITH CONCENTRATION IN ENGLISH**

This Bachelor's degree program prepares innovative future teachers at the Kindergarten to sixth grade level. Graduates will be prepared to design learning environments that will promote the acquisition of English as a second language.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>51</b>
<b>Major Courses</b>	<b>29</b>

<b>General Education Courses</b>	<b>(48 credits)</b>
FSED 105	Freshman Seminar 3
ENGL 154	Basic Communicative English 3 ENGL
155	Advanced Communicative Engl. 3 ENGL 223
	Reading and Writing Compendium 3 HUMA 115 Western
	Civilization I 3 HUMA 116 Western Civilization II
	3
HIST 253	History of Puerto Rico (Compendium) 3
HIST 273	History of the United States of America 3
INSC 101	Integrated Sciences I 3
INSC 102	Integrated Sciences II 3
MATH 120	Introductory Algebra 3
SOSC 103	Integrated Social Sciences I 3
SOSC 104	Integrated Social Sciences II 3
SPAN 155	Fundamentals of Reading and Writing/ Introduction to Reading 3
SPAN 250	Writing Techniques 3
SPAN 255	Research and Writing 3

Placement in Spanish and English freshman courses will be determined by CEEB examination scores and/or entrance diagnostic tests.

<b>Core Courses</b>	<b>(51 credits)</b>
EDUC 106	Introduction to Education 3
EDUC 171	Human Growth and Development 3
EDUC 172	Educational Psychology 3
EDUC 205	Sociological Foundations of Education 3
EDUC 214	Computers in Education 3
EDUC 276	Classroom Management 3

EDUC 355	Evaluation and Measurement of the Educational Process	3
EDUC 356	Practicum Seminar	1
EDUC 363	Curriculum Planning and Design	3
EDUC 401	Clinical Experiences Seminar	3
EDUC 420	Philosophical Foundations of Education	3
EDUC 435	Interdisciplinary Seminar	3
EDUC 436	Pedagogical Integration Seminar	3
EDUC 444	Practicum Teaching English in Elementary School	5
SPED 315	Teaching Exceptional Children	3
PHED 210	Health, Hygiene and Nutrition	3
COMS 104	Community Service	3

<b>Major Courses</b>	<b>(24 credits)</b>
ENGL 205	Literature I 3
ENGL 206	Literature II 3
ENGL 245	Advanced Grammar 3
ENGL 345	Children's Literature 3
ENGL 360	Contrastive Analyses between English and Spanish 3
ENGL 371	Introduction to Linguistics and Phonetics 3
EDUC 222	Teaching English as a Second Language in Elementary School 3
EDUC 350	Theories and Principles of Teaching English as Second Language 3

**BACHELOR'S DEGREE IN SECONDARY EDUCATION  
WITH CONCENTRATION IN BIOLOGY**

This bachelor's degree program prepares innovative future teachers at the seventh to twelfth grade level. Graduates will be prepared to design learning environments that will promote the acquisition of knowledge and skills needed for teaching biological sciences.

<b>Total Credits</b>	<b>125</b>
<b>General Education Courses</b>	<b>52</b>
<b>Core Courses</b>	<b>51</b>
<b>Major Courses</b>	<b>22</b>

<b>General Education Courses</b>	<b>(52 credits)</b>
FSED 105	Freshman Seminar 3
ENGL 154	Basic Communicative English 3 ENGL
155	Advanced Communicative English 3 ENGL 223

		3
Reading and Writing Compendium 3 HUMA 115 Western Civilization I	3 HUMA 116 Western Civilization II	
3		
HIST 253	History of Puerto Rico (Compendium)	
3 HIST 273	History of the United States of America	
3 PHSC 101	Introduction to Physical Science I	3 PHSC
102	Introduction to Physical Science II	3 CHEM 224
	Fundamentals of General Chemistry	3 CHEM 224L
	Fundamentals of General Chemistry Lab	1
MATH 120	Introductory Algebra	3
SOSC 103	Integrated Social Sciences I	3
SOSC 104	Integrated Social Sciences II	3
SPAN 155	Introduction to Writing/	
	Introduction to Reading	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

Placement in Spanish and English freshman courses will be determined by CEEB examination scores and/or entrance diagnostic tests.

**Core Courses (51 credits)**

EDUC 106	Introduction to Education	
EDUC 171	Human Growth and Development	3
EDUC 172	Educational Psychology	3
EDUC 205	Educational Sociology	3
EDUC 214	Computers in Education	3
EDUC 276	Classroom Management	3
EDUC 355	Evaluation and Measurement of the	
	Educational Process	3
EDUC 356	Practicum Seminar	1
EDUC 363	Curriculum Planning and Design	3
EDUC 401	Clinical Experiences Seminar	3
EDUC 420	Philosophical Foundations of Education	3
EDUC 435	Interdisciplinary Seminar	3
EDUC 436	Pedagogical Integration Seminar	3
EDUC 452	Practicum Teaching Biology in	
	Secondary School	5
SPED 315	Teaching Exceptional Children	3
PHED 210	Health, Hygiene and Nutrition	3
COMS 104	Community Service	3

**Major Courses (22 credits)**

BIOL 203	General Biology I	3
BIOL 203L	General Biology I Lab	1
BIOL 204	General Biology II	3
BIOL 204L	General Biology II Lab	1
BIOL 325	Botany	3
BIOL 325L	Botany Lab	1

BIOL 329	Ecology	3
BIOL 329L	Ecology Lab	1
BIOL 340	Genetics	3
EDUC 334	Teaching Science in Secondary School	3

**BACHELOR'S DEGREE IN SECONDARY EDUCATION WITH CONCENTRATION IN CHEMISTRY**

This Bachelor's degree program prepares innovative future teachers at the seventh to twelfth grade level. Graduates will be prepared to design learning environments that will promote the acquisition of knowledge and skills needed for teaching chemistry.

<b>Total Credits</b>	<b>127</b>
<b>General Education Courses</b>	<b>56</b>
<b>Core Courses</b>	<b>48</b>
<b>Major Courses</b>	<b>23</b>

**General Education Courses (56 credits)**

FSED 105	Freshman Seminar	3
ENGL 154	Basic Communicative English	3 ENGL
155	Advanced Communicative English	3 ENGL 223
Reading and Writing Compendium 3 HUMA 115 Western Civilization I	3 HUMA 116 Western Civilization II	
3		
HIST 253	History of Puerto Rico (Compendium)	
3 HIST 273	History of the United States of America	
3 PHSC 101	Introduction to Physical Science I	3
PHSC 102	Introduction to Physical Science II	3
BIOL 103	Survey of Biological Sciences	3
MATH 151	Pre-Calculus I	4
MATH 152	Pre-Calculus II	4
SOSC 103	Integrated Social Sciences I	3
SOSC 104	Integrated Social Sciences II	3
SPAN 155	Introduction to Writing/	
	Introduction to Reading	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

Placement in Spanish and English freshman courses will be determined by CEEB examination scores and/or entrance diagnostic tests.

**Core Courses (48 credits)**

EDUC 106	Introduction to Education	3
EDUC 171	Human Growth and Development	3
EDUC 172	Educational Psychology	3
EDUC 205	Educational Sociology	3
EDUC 214	Computers in Education	3

EDUC 276	Classroom Management	3
EDUC 355	Evaluation and Measurement of the Educational Process	3
EDUC 356	Practicum Seminar	1
EDUC 363	Curriculum Planning and Design	3
EDUC 401	Clinical Experiences Seminar	3
EDUC 420	Philosophical Foundations of Education	3
EDUC 435	Interdisciplinary Seminar	3
EDUC 436	Pedagogical Integration Seminar	3
EDUC 453	Practicum Teaching Chemistry in Secondary School	5
SPED 315	Teaching Exceptional Children	3
COMS 104	Community Service	3

**Major Courses (23 credits)**

CHEM 203	General Chemistry I	4
CHEM 203L	General Chemistry I Lab	0
CHEM 204	General Chemistry II	4
CHEM 204L	General Chemistry II Lab	0
CHEM 221	Analytic Chemistry	3
CHEM 221L	Analytic Chemistry Lab	1
CHEM 351	Organic Chemistry I	3
CHEM 351L	Organic Chemistry I Lab	1
CHEM 352	Organic Chemistry II	3
CHEM 352L	Organic Chemistry II Lab	1
EDUC 334	Teaching Science in Secondary School	3

**BACHELOR'S DEGREE IN SECONDARY EDUCATION WITH CONCENTRATION IN ENGLISH**

This program provides a space for training innovative future teachers in the seventh to twelfth grade level; Prepared to design learning environments that facilitate the acquisition of knowledge and skills for teaching English as a second language.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>51</b>
<b>Major Courses</b>	<b>24</b>

**General Education Courses (48 credits)**

FSED 105	Freshman Seminar	3
ENGL 154	Basic Communicative English	3 ENGL
155	Advanced Communicative English	3 ENGL
223	Reading and Writing Compendium	3 ENGL
HUMA 115	Western Civilization I	3
HUMA 116	Western Civilization II	3
HIST 253	History of Puerto Rico (Compendium)	3
HIST 273	History of the United States of America	3
INSC 101	Integrated Sciences I	3
INSC 102	Integrated Sciences II	3
MATH 120	Introductory Algebra	3

SOSC 103	Integrated Social Sciences I	3
SOSC 104	Integrated Social Sciences II	3
SPAN 155	Introduction to Writing/Introduction to Reading	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

Placement in Spanish and English freshman courses will be determined by CEEB examination scores and/or entrance diagnostic tests.

**Core Courses (51 credits)**

EDUC 106	Introduction to Education	3
EDUC 171	Human Growth and Development	3
EDUC 172	Educational Psychology	3
EDUC 205	Sociological Foundations of Education	3
EDUC 214	Computers in Education	3
EDUC 276	Classroom Management	3
EDUC 355	Evaluation and Measurement of the Educational Process	3
EDUC 356	Practicum Seminar	1
EDUC 363	Curriculum Planning and Design	3
EDUC 401	Clinical Experiences Seminar	3
EDUC 420	Philosophical Foundations of Education	3
EDUC 435	Interdisciplinary Seminar	3
EDUC 436	Pedagogical Integration Seminar	3
EDUC 449	Practicum Teaching English in Secondary School	3
SPED 315	Teaching Exceptional Children	3
PHED 210	Health, Hygiene and Nutrition	3
COMS 104	Community Service	3

**Major Courses (24 credits)**

ENGL 205	Literature I	3
ENGL 206	Literature II	3
ENGL 245	Advanced Grammar	3
ENGL 342	Adolescent Literature	3
EDUC 350	Theories and Principles of Teaching English as a Second Language	3
ENGL 360	Contrastive Analysis between English and Spanish	3
ENGL 371	Introduction to Linguistics and Phonetics	3
EDUC 331	Teaching English as a Second Language	3

**BACHELOR'S DEGREE IN SECONDARY EDUCATION  
WITH CONCENTRATION IN GENERAL SCIENCE**

This program provides a space for training innovative future teachers in the seventh to twelfth grade level; Prepared to design learning environments that facilitate the acquisition of knowledge and skills for the teaching of science.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>47</b>
<b>Core Courses</b>	<b>51 Major Courses</b>
	<b>25</b>

<b>General Education Courses</b>		<b>(47 credits)</b>
FSED 105	Freshman Seminar	3
ENGL 154	Basic Communicative English	3 ENGL
155	Advanced Communicative English	3 ENGL 223
	Reading and Writing Compendium	3 HUMA 115 Western
	Civilization I	3 HUMA 116 Western Civilization II
		3
HIST 253	History of Puerto Rico (Compendium)	3
HIST 273	History of the United States of America	3
MATH 151	Pre-Calculus I	4
MATH 152	Pre-Calculus II	4
SOSC 103	Integrated Social Sciences I	3
SOSC 104	Integrated Social Sciences II	3
SPAN 155	Introduction to Writing/ Introduction to Reading	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

Placement in Spanish and English freshman courses will be determined by CEEB examination scores and/or entrance diagnostic tests.

<b>Core Courses</b>		<b>(51 credits)</b>
EDUC 106	Introduction to Education	3
EDUC 171	Human Growth and Development	3
EDUC 172	Educational Psychology	3
EDUC 205	Sociological Foundations of Education	3
EDUC 214	Computers in Education	3
EDUC 276	Classroom Management	
EDUC 355	Evaluation and Measurement of the Educational Process	3
EDUC 356	Practicum Seminar	1
EDUC 363	Curriculum Planning and Design	3
EDUC 401	Clinical Experiences Seminar	3
EDUC 420	Philosophical Foundations of Education	3
EDUC 435	Interdisciplinary Seminar	3
EDUC 436	Pedagogical Integration Seminar	3

EDUC 451	Practicum Teaching Science in Secondary School	5
SPED 315	Teaching Exceptional Children	3
PHED 210	Health, Hygiene and Nutrition	3
COMS 104	Community Service	3

<b>Major Courses (25 credits)</b>		BIOL 203	General Biology I	3
	BIOL 203L	General Biology I Lab	1	BIOL
	204	General Biology II	3	BIOL 204L
		General Biology II Lab	1	
PHSC 101	Introduction to Physical Science I	3	PHSC	
102	Introduction to Physical Science II	3		
CHEM 203	General Chemistry I	4	CHEM 203L	
	General Chemistry I Lab	0	CHEM 204	General
	General Chemistry II	4	CHEM 204L	General Chemistry II Lab
		0		
EDUC 334	Teaching Science in Secondary School	3		

**BACHELOR'S DEGREE IN SECONDARY EDUCATION  
WITH CONCENTRATION IN HISTORY**

This program provides a space for training innovative future teachers in the seventh to twelfth grade level; Prepared to design learning environments that facilitate the acquisition of knowledge and skills for teaching history.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>48 Major Courses</b>
	<b>27</b>

<b>General Education Courses</b>		<b>(48 credits)</b>
FSED 105	Freshman Seminar	3
ENGL 154	Basic Communicative English	3 ENGL
155	Advanced Communicative English	3 ENGL 223
	Reading and Writing Compendium	3 HUMA 115 Western
	Civilization I	3 HUMA 116 Western Civilization II
		3
HIST 251	History of Puerto Rico I	3
HIST 271	History of the United States I	3
INSC 101	Integrated Sciences I	3
INSC 102	Integrated Sciences II	3
MATH 120	Introductory Algebra	3
SOSC 103	Integrated Social Sciences I	3
SOSC 104	Integrated Social Sciences II	3
SPAN 155	Introduction to Writing/ Introduction to Reading	3 SPAN 250
	Writing Techniques	3 SPAN 255
	Research and Writing	3

Placement in Spanish and English freshman courses will be determined by CEEB examination scores and/or entrance diagnostic tests.

**Core Courses (48 credits)**

EDUC 106	Introduction to Education	3
EDUC 171	Human Growth and Development	3
EDUC 172	Educational Psychology	3
EDUC 205	Sociological Foundations of Education	3
EDUC 214	Computers in Education	3
EDUC 276	Classroom Management	3
EDUC 355	Evaluation and Measurement	
	of the Educational Process	3
EDUC 356	Practicum Seminar	1
EDUC 363	Curriculum Planning and Design	3
EDUC 401	Clinical Experiences Seminar	3
EDUC 420	Philosophical Foundations of Education	3
EDUC 435	Interdisciplinary Seminar	3
EDUC 436	Pedagogical Integration Seminar	3
EDUC 455	Practicum Teaching History in	
	Secondary School	5
SPED 315	Teaching Exceptional Children	3
COMS 104	Community Service	3

**Major: History (27 credits)**

GEOG 201	Physical Geography	3
GEOG 225	Geography of Puerto Rico	3
HIST 221	Ancient and Medieval History	3
HIST 230	The Renaissance, Reform Movements	
	and the Rise of the State	3
HIST 232	Problems of the Contemporary World	3
HIST 252	History of Puerto Rico II	3
HIST 261	History of Latin America I	3
HIST 272	History of the United States II	3
EDUC 332	Teaching Social Sciences or	
	History in Secondary School	3

**BACHELOR'S DEGREE IN SECONDARY EDUCATION  
WITH CONCENTRATION IN MATHEMATICS**

This program provides a space for training innovative future teachers in the seventh to twelfth grade level; Prepared to design learning environments that facilitate the acquisition of knowledge and skills for the teaching of mathematics.

<b>Total Credits</b>	<b>124</b>
<b>General Education Courses</b>	<b>53</b>
<b>Core Courses</b>	<b>48</b>

**Major Courses 23**

**General Education Courses (53 credits)**

FSED 105	Freshman Seminar	3
ENGL 154	Basic Communicative English	3 ENGL
155	Advanced Communicative English	3 ENGL 223
	Reading and Writing Compendium	3 HUMA 115 Western
	Civilization I	3 HUMA 116 Western Civilization II
		3
HIST 253	History of Puerto Rico (Compendium)	3
HIST 273	History of the United States of America	3
INSC 101	Integrated Sciences I	3
INSC 102	Integrated Sciences II	3
MATH 151	Pre-Calculus I	4
MATH 152	Pre-Calculus II	4
SOSC 103	Integrated Social Sciences I	3
SOSC 104	Integrated Social Sciences II	3
SPAN 155	Introduction to Writing/	
	Introduction to Reading	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

Placement in, Spanish and English freshman courses will be determined by CEEB examination scores and entrance diagnostic tests. Students who do not meet eligibility requirements for advanced mathematic courses may have to take additional prerequisite courses.

**Core Courses (48 credits)**

EDUC 106	Introduction to Education	3
EDUC 171	Human Growth and Development	3
EDUC 172	Educational Psychology	3
EDUC 205	Sociological Foundations of Education	3
EDUC 214	Computers in Education	3
EDUC 276	Classroom Management	3
EDUC 355	Evaluation and Measurement	
	of the Educational Process	3
EDUC 356	Practicum Seminar	1
EDUC 363	Curriculum Planning and Design	3
EDUC 401	Clinical Experiences Seminar	3
EDUC 420	Philosophical Foundations of Education	3
EDUC 435	Interdisciplinary Seminar	3
EDUC 436	Pedagogical Integration Seminar	3
EDUC 450	Practicum Teaching Mathematics in	
	Secondary School	5
SPED 315	Teaching Exceptional Children	3
COMS 104	Community Service	3

**Major Courses (23 credits)**

MATH 173	Plane and Space Geometry I	3
----------	----------------------------	---

			3
MATH 221	Calculus I	4	MATH 222 Calculus II
4			
MATH 305	Probabilities & Statistics		3
MATH 345	Abstract Algebra	3	MATH 350 Lineal
Algebra		3	
EDUC 333	Teaching Mathematics in		
	Secondary School		3

**BACHELOR'S DEGREE IN SECONDARY EDUCATION  
WITH CONCENTRATION IN VOCATIONAL INDUSTRIAL  
EDUCATION**

This program provides a space for training innovative future teachers in the seventh to twelfth grade level; Prepared to design learning environments that facilitate the acquisition of knowledge and skills for teaching in the field of industrial vocational education.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>51</b>
<b>Major Courses</b>	<b>24</b>

<b>General Education Courses</b>		<b>(48 credits)</b>
FSED 105	Freshman Seminar	3
ENGL 154	Basic Communicative English	3
ENGL 155	Advanced Communicative English	3
ENGL 223	Reading and Writing Compendium	3
HUMA 115	Western Civilization I	3
HUMA 116	Western Civilization II	3
HIST 253	History of Puerto Rico (Compendium)	3
HIST 273	History of the United States of America	3
INSC 101	Integrated Sciences I	3
INSC 102	Integrated Sciences II	3
MATH 120	Introductory Algebra	3
SOSC 103	Integrated Social Sciences I	3
SOSC 104	Integrated Social Sciences II	3
SPAN 155	Introduction to Writing/	
	Introduction to Reading	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

Placement in Spanish and English freshman courses will be determined by CEEB examination scores and/or entrance diagnostic tests.

<b>Core Courses</b>		<b>(46 credits)</b>
EDUC 106	Introduction to Education	3
EDUC 171	Human Growth and Development	3
EDUC 172	Educational Psychology	3

EDUC 205	Sociological Foundations of Education	
EDUC 214	Computers in Education	3
EDUC 276	Classroom Management	3
EDUC 355	Evaluation and Measurement	
	of the Educational Process	3
EDUC 356	Practicum Seminar	1
EDUC 363	Curriculum Planning and Design	3
EDUC 401	Clinical Experiences Seminar	3
EDUC 420	Philosophical Foundations of Education	3
EDUC 435	Interdisciplinary Seminar	3
EDUC 436	Pedagogical Integration Seminar	3
EDUC 449	Practicum Teaching in Vocational	
	Industrial Education	5
SPED 315	Teaching Exceptional Children	3
PHED 210	Health, Hygiene and Nutrition	3
COMS 104	Community Service	3

**Major: Vocational Industrial Education (24 credits)**

EDVI 465	Foundations of Vocational	
	Industrial Education	3
EDVI 466	Methods and Curriculum in	
	Vocational Industrial Education	3
EDVI 467	Evaluation of Vocational Industrial	
	Education	3
EDVI 468	Development of Educational Resources	
	Applied to Vocational Industrial	
	Education	3
EDVI 469	Health, Hygiene and Safety in Vocational	
	Industrial Education	3
EDVI 470	Student Organizations	3
EDVI 472	Organization, Supervision and	
	Administration of the Vocational	
	Industrial Workshop	3
EDVI 473	Labor Relations: Implications for	
	Vocational Industrial Educators	3

**Notes:**

1. Candidates for this degree must have completed a major in one of the skills taught in vocational schools such as plumbing, electrician, food preparation, cosmetology, etc.
2. Besides the completion of the Bachelor's Degree in Arts in Secondary Education with a major in Vocational Industrial Education, to obtain a Teaching certificate in

Vocational Industrial Education, candidates must be licensed by the corresponding Examining Board for those occupations that are regulated by law and be a member of the corresponding guild for those occupations that have such a representative association.

### BACHELOR'S DEGREE IN SPECIAL EDUCATION WITH CONCENTRATION IN SPECIAL EDUCATION K-12

This program provides a space for the training of innovative teachers in special education from the K-12 level, who are aware of the specific needs of the students they serve and are prepared to meet those needs in a context of respect for diversity.

**Total Credits 123**

**General Education 48**

**Core Courses 51 Major Courses 24**

**General Education Courses (48 credits)**

FSED 105	Freshman Seminar	3
SPAN 155	Introduction to Writing/ Introduction to Reading	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
ENGL 154	Basic Communicative English	3
ENGL 155	Advanced Communicative English	3
ENGL 223	Reading and Writing Compendium	3
MATH 120	Introductory Algebra	3
INSC 101	Integrated Sciences I	3
INSC 102	Integrated Sciences II	3
HUMA 115	Western Civilization I	3
HUMA 116	Western Civilization II	3
HIST 253	History of Puerto Rico (Compendium)	3
HIST 273	History of the United States of America	3
SOSC 103	Integrated Social Sciences I	3
SOSC 104	Integrated Social Sciences II	3

Placement in Spanish and English freshman courses will be determined by CEEB examination scores and/or entrance diagnostic tests.

**Core Courses (51 credits)**

EDUC 106	Introduction to Education	3
EDUC 171	Human Growth and Development	3
EDUC 172	Educational Psychology	3
EDUC 205	Sociological Foundations of Education	3
EDUC 214	Computers in Education	3
EDUC 276	Classroom Management	3

EDUC 355	Evaluation and Measurement of the Educational Process	3
EDUC 356	Practicum Seminar	1
EDUC 363	Curriculum Planning and Design	3
EDUC 401	Clinical Experiences Seminar	3
EDUC 420	Philosophical Foundations of Education	3
EDUC 435	Interdisciplinary Seminar	3
EDUC 436	Pedagogical Integration Seminar	3
SPED 315	Teaching Exceptional Children	3
SPED 445	Special Educacion Practicum K-12 Grades	5
PHED 210	Health, Hygiene and Nutrition	3
COMS 104	Community Service	3

**Major Courses (24 credits)**

SPED 214	Assistive Technology in Special Education	3
SPED 216	Teaching Reading and Writing to Handicapped Children I	3
SPED 217	Teaching Reading and Writing to Handicapped Children II	3
SPED 218	Methodology for Teaching Mathematics in Special Education	3
SPED 312	Education of Children with Specific Learning Disabilities	3
SPED 324	Behavior Modification of the Handicapped Child	3
SPED 360	Methodology for Teaching Exceptional Children	3
SPED 322	Language Development and Speech Correction for Exceptional Children	3

### BACHELOR'S DEGREE IN PHYSICAL EDUCATION WITH CONCENTRATION IN K-12 LEVEL

This program provides a space for training innovative future teachers in physical education from level K to 12, is aimed at the development of competent teachers in scientific fundamentals, sports skills and historical perspective in the field, in addition to the general objectives in Education.

**Total Credits 126**

**General Education Courses 48**

**Core Courses 51**

		3			
<b>Major Courses</b>		<b>27</b>		Level	3
<b>General Education Courses</b>		<b>(48 credits)</b>			
FSED 105	Freshman Seminar	3	PHED 222	Swimming and First Aid	3
ENGL 154	Basic Communicative English	3 ENGL	PHED 223	Group Sports	3
155	Advanced Communicative English	3 ENGL 223	PHED 224	Individual Sports	3
	Reading and Writing Compendium	3 HUMA 115	PHED 300	Methodology and Teaching Physical	
	Civilization I	3 HUMA 116		Education at the Secondary Level	3
		3	PHED 355	Evaluation and Research in	
HIST 253	History of Puerto Rico (Compendium)	3		Secondary Level Physical Education	3
HIST 273	History of the United States of America	3	PHED 356	Organization and Administration of	
INSC 101	Integrated Sciences I	3		Physical Education K-12	3
INSC 102	Integrated Sciences II	3			
MATH 120	Introductory Algebra	3	PHED 105	Physical Efficiency and Gymnastics	3
SOSC 103	Integrated Social Sciences I	3			
SOSC 104	Integrated Social Sciences II	3			
SPAN 155	Introduction to Writing/				
	Introduction to Reading	3			
SPAN 250	Writing Techniques	3			
SPAN 255	Research and Writing	3			

Placement in Spanish and English freshman courses will be determined by CEEB examination scores and/or entrance diagnostic tests.

<b>Core Courses</b>		<b>(51 credits)</b>
EDUC 106	Introduction to Education	3
EDUC 171	Human Growth and Development I	3
EDUC 172	Educational Psychology	3
EDUC 205	Sociology of Education	3
EDUC 214	Computers in Education	3
EDUC 276	Classroom Management	3
EDUC 355	Evaluation and Measurement	
	of the Educational Process	3
EDUC 356	Practicum Seminar	1
EDUC 363	Curriculum Planning and Design	3
EDUC 401	Clinical Experiences Seminar	3
EDUC 420	Philosophy of Education	3
EDUC 435	Interdisciplinary Seminar	3
EDUC 436	Pedagogical Integration Seminar	3
SPED 315	Teaching Exceptional Children	3
PHED 210	Health, Hygiene and Nutrition	3
COMS 104	Community Service	3
PHED 447	Physical Education Practicum K-12	5

<b>Major Courses</b>		<b>(27 credits)</b>
PHED 220	Anatomy and Physiology	3
PHED 221	Motor Skills Development, Simple Games and Sports at the Elementary	

## BACHELOR'S DEGREE IN RECREATION

Elaborated for the professional training of recreational leaders in Puerto Rico. It empowers the student in the management of free time, leisure, theories, methods and practices on their social, personal, environmental, economic and cultural benefits.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>48</b>
<b>Major Courses</b>	<b>72</b>

### General Education Courses (48 credits)

FSED 105	Freshman Seminar	3
SPAN 155	Introduction to Writing/ to Reading	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

EDUC 171	Human Growth and Development I	3
EDUC 172	Educational Psychology	3
EDUC 205	Sociology of Education	3
PHED 210	Health, Hygiene and Nutrition	3
SPED 315	Teaching Exceptional Children	3
COMS 104	Community Service	3
PHED 222	Swimming and First Aid	3
PHED 223	Group Sports	3
PHED 224	Individual Sports	3
PHED 207	Physical Education of the Handicapped	
	Child	3
MANA 210	Management Theory	3
MANA 230	Organizational Behavior	3
MARK 133	Principles of Marketing	3
PHED 201	Principles and History of Physical	
	Education	3
RECR 201	Introduction Recreation	3
RECR 202	Leisure of Life Style	3
RECR 203	Recreational Programing	3
RECR 204	Planning and Management Recreation	

Facilities

3

ENGL 154 Basic Communicative English 3 ENGL 155  
Advanced Communicative English 3 ENGL 223 Reading  
and Writing Compendium 3 MATH 126 Introductory  
Algebra 3 INSC 101 Integrated Sciences I 3 INSC 102  
Integrated Sciences II 3 HUMA 115 Western Civilization I  
3 HUMA 116 Western Civilization II 3  
HIST 253 History of Puerto Rico (Compendium)  
3 HIST 273 History of the United States of America  
3 SOSC 103 Integrated Social Sciences I 3  
SOSC 104 Integrated Social Sciences II 3

Placement in Spanish and English freshman courses will be determined by CEEB examination scores and/or entrance diagnostic tests.

**Major Courses (72 credits)**

RECR 205	Commercial and Tourism Recreation	3
RECR 206	Management Recreational Services	3
RECR 207	Inclusive Recreation	3
RECR 300	Leadership and Supervised Recreational System	3
RECR 301	Evaluation and Research Recreation	3
RECR 400	Seminary Recreational Practice	3

## COURSE DESCRIPTIONS

### COMS 104

#### Community Service

#### Three Credit Hours

This course is designed with two specific goals: to provide the student practical experiences in scenarios similar to the ones s/he will encounter after graduation; and to develop a sense of civic responsibility and involvement in the student. A minimum of 30 hours of volunteer service in a non-profit agency, organization or institution is required.

### EDUC 106

#### Introduction to Education

#### Three Credits

This is the first professional course in the curriculum of the teacher preparation program. It introduces concepts related to education while students explore their individual commitment to teaching as a career, and their strengths and weaknesses. Special emphasis will be placed on observation and analysis of school scenarios, especially the teaching-learning process. The different roles a teacher must take, as part of his/her school functions will be discussed. The student will complete 15 hours of clinical experiences.

### EDUC 123

#### Creative Expression in Young Children

#### Three Credits

Students will study the methods, materials and techniques used in developing basic skills in music, art, and drama in young children. Students will practice processes used to initiate singing, basic rhythms, use of simple instruments, arts and crafts materials, use of puppets, improvisation and dramatization according to child's age development and maturity from pre-school to sixth grade. The course includes discussions of ways to motivate free expression and creativity in infants and young children, as well as the development of awareness and appreciation of the fine arts in young children.

### EDUC 171

#### Human Growth and Development

#### Three Credits

The course centers on the study of psychological thought related to growth and development from birth through adolescence, and its implications for the teacher and the school. Changes that occur in human beings from the moment of conception and throughout the different stages of life, such as prenatal, infancy, childhood, adolescence and adulthood, are studied from the physical, psychomotor,

social, psychological, and moral viewpoints. Ten hours of classroom observations are part of the requirements.

### EDUC 172

#### Educational Psychology

#### Three Credits

This course offers a wide overview of concepts related to learning and intelligence and their relationship with human development. Topics discussed are psychometric techniques, styles and theories of learning, emotional development, moral development and ethical conduct, as well as the development of personality, mental and physical health. The course examines the relationship of these theories to educational practice and the role of the teacher.

### EDUC 201

#### Introduction to Educational Technology and Basic

#### Principles of Instructional Design

#### Three Credits

This course intends to analyze the historical development and integration of the audiovisual field into the educational process. It focuses in the systematic analysis of instruction, identification of needs, objective definition, choosing media, activities, instructional strategies and process evaluation. The integration of technology into the teaching-learning process is examined.

### EDUC 202

#### Teaching Materials and Learning Devices

#### Three Credits

This laboratory course combines graphic and instructional media processes for education and training purposes. Techniques for integrating media into instruction are practiced. Students will develop instructional materials, taking into consideration the principles of good communication, appropriate and effective design, and the use and evaluation of these materials.

### EDUC 205

#### Sociological Foundations of Education

#### Three Credits

The course is a study of culture and its relationship to the educational process. It covers phenomena of change and their educational implications. School is analyzed as a social and political system. The role of economics, history and the social sciences in education and educational thought is examined. Different socio-cultural principles are analyzed as they relate to the development of the educational system of Puerto Rico.

### EDUC 206

#### Teaching Reading in Grades K-3

### **Three Credits**

A study of the theory and practice of essential aspects in the teaching of reading in grades kindergarten to third. Emphasis on different methods employed to teach reading. Includes development of teaching techniques, strategies, diagnosis and correction of reading difficulties.

### **EDUC 207**

#### **Teaching Writing in Grades K-3**

### **Three Credits**

Study and analysis of the theory and practice used in the teaching of writing in grades kindergarten to third. Development of teaching techniques and strategies used to teach writing to young children are emphasized. Includes the diagnosis and correction of writing difficulties.

### **EDUC 208**

#### **Critical Thinking Skills and the Teaching of Social Studies in Primary School K-3**

### **Three Credits**

This course is designed to prepare the future teacher in the content and skills of the social studies program for grades Kinder through Third of the primary school. It examines in depth themes related to the development of mental processes, intellectual skills, processes used for conflict resolution, and the development of ideal attitudes and values expected of a future teacher. Standards of the Social Studies Program of the Department of Education of PR are used as base reference.

### **EDUC 209**

#### **Elementary School Mathematics Curriculum**

### **Three Credits**

Examination and comparison of the mathematics curricula and teacher standards of the Department of Education of Puerto Rico and the National Council of Teachers Mathematics Standards for teaching this subject in the elementary school. This course prepares future elementary school teachers by exposing them to techniques, processes, strategies and means to teach mathematics. Development of mathematical skills and the inductive method will be emphasized as will be the use of the computer as a learning tool for this subject.

### **EDUC 210**

#### **The Elementary School Science Curriculum**

### **Three Credits**

Examination and comparison of the elementary school science curricula and teacher standards of the Department of Education of Puerto Rico and the standards for the

teaching of science of the United States. This course prepares future teachers through the study and analysis of the foundations, theories, principles, skills, concepts, planning, research, and implementation of the elementary school science curriculum. Emphasis is placed on the new concepts for teaching science: to learn by discovery, hands-on science activities, the communication of ideas and research findings, and on teaching strategies which help children learn the processes and concepts of science. The use and integration of technology is emphasized.

### **EDUC 211**

#### **Curriculum and Teaching of Mathematics in Fourth to Sixth Grades**

### **Three Credits**

This course prepares future teachers by exposing them to techniques, processes, strategies and means to teach mathematics in grades four through six. The development of mathematical skills will be emphasized, as well as practice of the inductive method. The Standards for the Mathematics Program published by the local Department of Education will be examined. The use of the computer as a learning tool is explored and emphasized.

### **EDUC 212**

#### **Curriculum and Teaching of Science in Fourth to Sixth Grades**

### **Three Credits**

This course studies and analyzes the foundations, theories, principles, skills, concepts, planning, research, implementation and curriculum for the teaching of science in the fourth to the sixth grades. Considerable emphasis is placed on hands-on science activities and on those teaching strategies which help children learn processes and concepts of science. The Standards of the Science Program published by the local Department of Education are examined. The use and integration of technology is emphasized.

### **EDUC 213**

#### **Math and Science: Age of Discovery: Pre Kindergarten to Third Grade**

### **Three Credits**

Students will study and analyze the science and mathematics curriculum and its application from preschool and kindergarten to the third grade. Curriculum design for science and mathematics and its relationship to the growth and development of children from ages three to eight will be examined. The use of the computer as a learning tool is explored and emphasized, as well as the examination of the Standards for the Science and Mathematics Programs produced by the local Department of Education. Clinical

experience of at least ten hours throughout the semester will be required.

**EDUC 214**  
**Computers in Education**  
**Three Credits**

This course introduces general concepts about the structure of computers, their impact on modern society and their integration into the educational process. The course provides laboratory experiences in which the student will practice acquired knowledge in diverse situations related to teaching. Students will learn the use of computers as teaching and learning tools and will integrate the use of other emerging technology into their learning experience.

**EDUC 215**  
**Critical Thinking Skills and the Teaching of Social Studies in Elementary School**  
**Three Credits**

This course is designed to prepare the future teacher in the content and skills of the social studies program for grades Pre-K through Sixth of the elementary school. It examines in-depth themes related to the development of mental processes, intellectual skills, processes used for conflict resolution, and the development of ideal attitudes and values expected of a future teacher. Standards of the Social Studies Program of the local Department of Education are used as a point of reference.

**EDUC 216**  
**Teaching of Reading in Fourth to Sixth Grade: Diagnosis and Correction of Reading Difficulties**  
**Three Credits**

The course centers on the theoretical and practical study of essential aspects needed to teach reading in elementary grades four through six. Conceptual models and official documents of the local Department of Education are studied and analyzed. Students will also examine and discuss selected literature appropriate for the grades included in this course.

**EDUC 217**  
**Teaching of Writing in Fourth To Sixth Grade: Diagnosis and Correction of Writing Difficulties**  
**Three Credits**

This course will prepare future teachers in grades four to six in basic techniques needed to develop writing skills, calligraphy, spelling and creativity. Standards of Excellence of the Spanish Program of the Department of Education will be examined. Available commercial materials for the teaching of writing will be examined. Future teachers will

practice the production of materials to provide for the needs of each child. This course will combine theory and practice and will develop in the future teacher the skills needed to teach writing as a process of communication.

**EDUC 219**  
**Perceptual Motor Development in Preschool and Primary Education**  
**Three Credits**

Students will study the physical, social, emotional and cognitive development of children and its impact on perceptual motor development. Different development theories are analyzed and their practical use is discussed. The course includes the study and analysis of childhood development theories of contemporary teaching and learning. Instructional strategies will include observation, analysis, research, simulations, small group discussion, and teamwork.

**EDUC 222**  
**Teaching of English as a Second Language**  
**Three Credits**

The course centers on the study of the principles, methods and techniques used in the teaching of English as a second language in elementary school. Emphasis is placed on the curriculum, textbooks, lesson planning and observation, and the Standards for the Teaching of English as proposed by the Department of Public Education. Participatory experiences equivalent to ten hours of clinical experiences will be required.

**EDUC 225**  
**Methods for Teaching from Preschool to Third Grade**  
**Three Credits**

The course is a study of all aspects related to the integrated development of preschool and primary education. The physical, emotional and cognitive development of the young child will be discussed. The history of preschool and primary education will be examined, as well as innovative methods, the curriculum, and the physical environment necessary to facilitate a good preschool program. Also studied are new approaches, as well as educational resources needed to develop an effective and successful preschool and primary grades program.

**EDUC 276**  
**Classroom Management**  
**Three Credits**

This course will discuss, analyze and observe the daily occurrences of an elementary or secondary school classroom with the intention of studying techniques and strategies of

classroom management, group control and behavior modification. The subject of violence in the schools and how to deal with it or prevent it will be widely discussed. This course is strongly recommended as an elective for all secondary school majors. Classroom observations and participatory experiences equivalent to ten hours of clinical experiences will be required.

### **EDUC 308**

#### **Participation of the Family and the Community in the Development of Children in Preschool and Primary Grades**

##### **Three Credits**

The course covers the foundations and components of human diversity in the educational context. Emphasis is placed on the development and application of processes and collaboration skills needed to work together with students, families and diverse groups to promote the development of learning communities.

### **EDUC 319**

#### **Theory, Practice and Assessment of Play Activities in Early and Primary Education Programs**

##### **Three Credits**

The course centers on the study, practice and assessment of theories related to play activities and the use of games in education, from preschool and kindergarten, up to third grade. Themes to be discussed include the role of play and game activities in child development, play as representation of reality, the purpose of play, types of games suitable for four to eight-year-olds, the purpose of evaluation in game activities, the need to follow rules while playing, and the use of play and game activities in assessment strategies.

### **EDUC 322**

#### **Language Development and Correction of Speech Difficulties in Preschool and Primary Grades**

##### **Three Credits**

The course covers language development of preschool and elementary school children. Different stages in linguistic development and theories related to early signs of language and speech difficulties in preschool and elementary school are studied and analyzed. Emphasis is placed on the identification and referral of children with language and speech difficulties, so that they may receive the special services they need to improve their oral communication.

### **EDUC 323**

#### **Literature for Children from Preschool to Sixth Grade**

### **Three Credits**

In theoretical and practical form, this course offers the future teacher the most essential material related to children's literature within the elementary school program. Future teachers must be knowledgeable about a select and ample amount of children's literature, as well as about the methodology that will enable them to instill the enjoyment of good literature in children, and also inspire them to create their own. In this course books, works of art, fiction, folklore, poetry and games will be studied. Creativity will be stimulated

### **EDUC 324**

#### **Preschool Education: Past, Present and Future**

##### **Three Credits**

The course centers on the discussion of the historical and legal roots of preschool education. Innovative methods, techniques, strategies and best practices for the education of three- and four-year olds will be examined and discussed. Evaluation, selection and design of educational materials for this age group are also included.

### **EDUC 330**

#### **Teaching Spanish in Secondary School**

##### **Three Credits**

Students will study and analyze various aspects involved in the teaching of Spanish in secondary school. The course includes both theoretical content and practical experience related to the teaching of Spanish, the Standards of Excellence promoted by the Department of Education, and the strategies and methodologies employed for teaching language skills in oral and written form.

### **EDUC 331**

#### **Teaching of English in Secondary School**

##### **Three Credits**

This course is a requirement for all majors in the Teaching of English as a Second Language in secondary schools. It is based on the study and analysis of the objectives, materials, approaches and techniques suggested for teaching English. The Standards of Excellence determined by the Department of Public education are examined and used as a point of reference.

### **EDUC 332**

#### **Teaching of Social Sciences and History in Secondary School**

##### **Three Credits**

This course provides future teachers an overview of the history and social studies curriculum, and examines skills needed to teach one of these two areas of the secondary school curriculum. Principles of integration, processes,

methods, techniques and styles of learning are studied, along with the Standards of Excellence proposed by the Department of Education for these two areas.

### **EDUC 333**

#### **Teaching Mathematics in Secondary Schools**

##### **Three Credits**

The course is an analysis of different aspects related to the teaching of mathematics in secondary school. Methods, materials, curriculum, textbooks, teacher guides and the Standards of Excellence proposed for the teaching of mathematics are examined and analyzed.

### **EDUC 334**

#### **Teaching of Science in Secondary School**

##### **Three Credits**

The purpose of this course is to offer prospective secondary school science teachers the practical and theoretical experience needed to teach science. The course is divided into three parts: theory, the teaching of science in secondary school, and science curriculum. Specific knowledge that must be acquired by the students is emphasized in the last part of the course. Standards of Excellence for the Teaching of Science are discussed.

### **EDUC 336**

#### **Development of Language and Correction of Speech Difficulties in Primary**

##### **Three Credits**

Language development of preschool and primary (K-3) school children. Different stages in linguistic development and theories related to early signs of language and speech difficulties in preschool and elementary school are studied and analyzed. The emphasis of this course is the identification and referral of children with language and speech difficulties so they may receive the special services they need to improve their oral communication.

### **EDUC 337**

#### **Childrens literature Elementary School**

##### **Three Credits**

This Course offers future teachers a technical and practical way for the study and analysis of diverse literature genres that correspond to the field of childrens literature, like: story, poetry, drama, songs, games as well as other forms of expression. The future teacher will develop diverse strategies and resources directed towards introducing students to literary appreciation. The course stimulate and enriches the sensitivity and lexical capacity of future teachers, facilitates communication, socialization, character education, group

work and the development of creative skills contributing for students integral development.

### **EDUC 338**

#### **Childrens literature Elementary School**

##### **Three Credits**

This Course offers future teachers a technical and practical way for the study and analysis of diverse literature genres that correspond to the field of childrens literature, like: story, poetry, drama, songs, games as well as other forms of expression. The future teacher will develop diverse strategies and resources directed towards introducing students to literary appreciation. The course stimulate and enriches the sensitivity and lexical capacity of future teachers, facilitates communication, socialization, character education, group work and the development of creative skills contributing for students integral development.

### **EDUC 339**

#### **Inclusion Vision and Process: Management of at Risk Children**

##### **Three Credits**

The course centers on the study of the nature and needs of handicapped infants and primary school children. Concepts and factors that determine which children are potentially at risk and will need special services are examined. Emphasis is placed on diagnosis and evaluation, teaching techniques, adaptation of the curriculum, and strategies for early intervention of children with developmental difficulties.

### **EDUC 350**

#### **Theories and Principles of Teaching English as a Second Language**

##### **Three Credits**

The course centers on the study of the theories, methodologies and techniques for teaching English as a second language. Students will reflect upon the principles, foundations, studies and supporting research in order to compare their effectiveness or lack thereof in teaching a second language. Students will conduct active demonstrations of techniques based on school visits and observations. They will also reflect on the diversity of their personal teaching styles and how they meet the needs of Puerto Rican students. Future teachers will receive guidance in comparing and analyzing relevant results from research and from their school visits. In this way they will be able to make practical suggestions and recommend effective practices for teaching English as a Second Language in Puerto Rico.

### **EDUC 355**

#### **Evaluation and Measurement of the Educational**

## **Process**

### **Three Credits**

The course covers the theory and practice in evaluating the educational process. Emphasis is placed on the taxonomy of objectives and to the skills required for promoting student achievement. Topics include current concepts in evaluation criteria, performance, and mastery testing, among others. Traditional concepts of preparation, administration, correction and interpretation of achievement tests; basic concepts of statistics, and recent evaluation criteria, such as assessment strategies and the use of portfolios, will be discussed and analyzed. The course includes discussions of other evaluation procedures that prospective teachers should be aware of.

## **EDUC 363**

### **Curriculum Planning and Design**

#### **Three Credits**

This course prepares the future teacher in the development of curricular theories. Types of curricula, as well as organization, models and concepts, curriculum development and implementation are examined and analyzed. Lesson planning and classroom organization are also discussed.

## **EDUC 367**

### **Care of Children in Preschool Education**

#### **Three Credits**

The course covers strategies for the physical and emotional care of three- and four-year-olds, including behavior modification techniques and conflict resolution. Health, nutrition, and security aspects related to preschool programs are also discussed.

## **EDUC 400**

### **Correction of Reading and Writing Difficulties in Secondary School Students**

#### **Three Credits**

The course is designed for secondary education majors. It provides future teachers with the necessary skills to identify and correct language difficulties of secondary school students. The application of Spanish language skills in reading and writing across the curriculum will be emphasized, as well as the need to manage reading skills to comprehend and interpret materials in each discipline.

## **EDUC 401**

### **Clinical Experiences Seminar**

#### **Three Credits**

This course is the second clinical experience requirement in the School of Education's Teacher Preparation Programs. It includes fifteen hours of a campus-based seminar and 30

clinical experiences hour of direct observation and active participation in at least two different school scenarios, as well as 15 lecture hours.

## **EDUC 403**

### **Administration of Preschool and Early Childhood Programs**

#### **Three Credits**

The course centers on the study and analysis of knowledge, content and skills required in planning, managing and coordinating educational programs for infants, toddlers and preschool children. Topics discussed are: types of programs, planning and evaluation of goals, selecting and supervising human resources, use and maintenance of physical resources, the role of parents in the education of young children, government agencies that regulate programs and facilities, and current legislation pertaining to preschool and early childhood education. The requirements for opening a preschool or infant day care center will be examined. Clinical experiences are required amounting to at least 15 hours per semester.

## **EDUC 420**

### **Philosophical Foundation of Education**

#### **Three Credits**

Students will examine, analyze, and critique the historical, philosophical and cultural roots of our educational system and its changes over time. The basis for an educational philosophy will be studied, along with social, cultural, religious and political changes that have influenced education in Puerto Rico. Some philosophical concepts will be examined, such as, idealism, realism, pragmatism, existentialism, and constructivism.

## **EDUC 435**

### **Interdisciplinary Seminar**

#### **Three credits**

Professional seminar that integrates the academic, socialhumanistic and scientific knowledge that has been developed by the student teacher during his\her formation. Analysis and discussion of tendencies, methods and innovations related to fundamental knowledge and communicative competence of future teachers in their global and local context. Emphasis is given on case studies, problem solving, thematic discussions and technology application.

## **EDUC 436**

### **Pedagogical Integration Seminar**

#### **Three Credits**

This course integrates academic and professional knowledge obtained by future teachers throughout their course of study. Innovations in education,

methods, techniques and strategies are discussed and analyzed. A review of sociological, philosophical and psychological foundations of education will be included, as a preparation for the teacher's certification examination.

#### **EDUC 441**

##### **Practicum Teaching in Preschool**

This is a laboratory experience for students whose major is preschool education. Student teachers will participate in a real educational setting to practice knowledge acquired in education courses. The student teacher will gradually assume teaching responsibilities in a real classroom.

#### **EDUC 443**

##### **Practicum Teaching in Pre-Kinder to Third Grade**

##### **Five Credits**

This is a laboratory experience for students whose major is primary education (K-3). Student teachers will participate in a real educational setting to practice knowledge acquired in education courses. The student teacher will gradually assume teaching responsibilities in a real classroom.

#### **EDUC 444**

##### **Practicum Teaching English in Elementary School**

##### **Five Credits**

This is a practicum course for students whose major is the teaching of English at the elementary level. Student teachers will participate in real educational settings to practice knowledge acquired in education courses. They will gradually assume teaching responsibilities in a real classroom.

#### **EDUC 447**

##### **Practicum Teaching Forth to Sixth Grade**

##### **Five Credits**

This is a laboratory experience for students whose major is Fourth to Sixth Grade Education. The student teacher will participate in a real educational setting to practice knowledge acquired in education courses. The student teacher will gradually assume the responsibility of teaching in a real classroom.

#### **EDUC 448**

##### **Practicum Teaching Spanish in Secondary School**

##### **Five Credits**

This is a practicum course for students whose major is the teaching of Spanish at the secondary level. The student teacher will participate in real educational settings to practice knowledge acquired in education courses. The student teacher will gradually assume teaching responsibilities in a real classroom.

#### **EDUC 449**

##### **Practicum Teaching English in Secondary School**

##### **Five Credits**

The course is a laboratory experience for students whose major is one of the content areas in secondary school education. The student teacher will participate in a real educational setting to practice knowledge acquired in education courses. The student teacher will gradually assume teaching responsibilities in a real classroom.

#### **EDUC 450**

##### **Practicum Teaching Mathematics in Secondary School**

##### **Five Credits**

This is a practicum course for students whose major is the teaching of mathematics at the secondary level. The student teacher will participate in real educational settings to practice knowledge acquired in education courses. The student teacher will gradually assume teaching responsibilities in a real classroom.

#### **EDUC 451**

##### **Practicum Teaching Science in Secondary School**

##### **Five Credits**

This is a practicum course for students whose major is the teaching of general science at the secondary level. The student teacher will participate in real educational settings to practice knowledge acquired in education courses. The student teacher will gradually assume teaching responsibilities in a real classroom.

#### **EDUC 452**

##### **Practicum Teaching Biology in Secondary School**

##### **Five Credits**

This is a practicum course for students whose major is the teaching of biology at the secondary level. The student teacher will participate in real educational settings to practice knowledge acquired in education courses. The student teacher will gradually assume teaching responsibilities in a real classroom.

#### **EDUC 453**

##### **Practicum Teaching Chemistry in Secondary School**

##### **Five Credits**

This is a practicum course for students whose major is the teaching of chemistry at the secondary level. The student teacher will participate in real educational settings to practice knowledge acquired in education courses. The student teacher will gradually assume teaching responsibilities in a real classroom.

**EDUC 454****Practicum Teaching Social Science in Secondary School****Five Credits**

This is a practicum course for students whose major is the teaching of social sciences at the secondary level. The student teacher will participate in real educational settings to practice knowledge acquired in education courses. The student teacher will gradually assume teaching responsibilities in a real classroom.

**EDUC 455****Practicum Teaching History in Secondary School****Five Credits**

This is a practicum course for students whose major is the teaching of history at the secondary level. The student teacher will participate in real educational settings to practice knowledge acquired in education courses. The student teacher will gradually assume teaching responsibilities in a real classroom.

**EDUC 456****Preparatory Course for Cooperating Teachers****Three Credits**

This course is designed to prepare k-12 teachers to perform as cooperating teachers in their respective content areas. It includes an analysis of the policies and procedures for the teaching practice, as well as the tasks to be accomplished by each member of the program. It will also study adult education models, teaching practice processes, teaching related laws, professional standards with a focus on diverse techniques and strategies to promote the professional development of teacher's candidates. The topics will be given in context, based on the particular content area to be supervised by the cooperating teacher.

**EDUC 457****Cooperative Teacher Recertification Course****One Credit**

The course will guide the recertification of cooperative teachers. Normative procedures of the practicum experience will be analyzed. Emphasis will be given to the responsibilities of school personnel, the teacher candidate and the practicum supervisor. It discusses the parameters to guide and structure content: content standards, grade expectations, diverse educational strategies, methods and techniques, and thinking levels, among others. Diverse topics will be discussed in the context of a particular subject matter of teaching level and according to current educational trends. The course might be offered to preschool to the

secondary level teachers. It might combine face to face, online and research modalities.

**EDVI 449****Practicum Teaching in Vocational Industrial Education****Three Credits**

Practicum course for students whose major is the teaching of vocational industrial at the secondary level in which the student teacher will participate in real educational settings to practice knowledge acquired in education courses. The student teacher will gradually assume the responsibility of teaching in a real classroom.

**EDVI 465****Foundations of Vocational Industrial Education****Three Credits**

This course examines vocational education, the different laws that regulate the development of vocational and technical education, progress indicators, professional development opportunities, as well as goals and objectives of occupational education. The course includes the development of an action plan to improve teachers' leadership potential, based on current legislation.

**EDVI 466****Methods and Curriculum in Vocational Industrial Education****Three Credits**

The course covers basic processes needed to analyze competencies and skills that should be developed by students taking vocational and technical courses. Emphasis is placed on the use of official documents that vocational and technical teachers should be familiar with. Alternatives for the integration and adaptation of the curriculum to the work place are studied. Different alternatives to develop measurable objectives based on the standard technological curriculum and skills required in the occupational field are examined.

**EDVI 467****Evaluation in Vocational Industrial Education****Three Credits**

The course covers techniques and skills used to implement the processes of assessment and evaluation based on competence, standards of excellence, and a log of skills required of vocational students in an occupational setting. Models of scientific instruments to measure the results of the teaching and learning processes will be developed. Students will be able to try out tests and other evaluation instruments

they have developed with selected student populations, in order to measure the reliability of these instruments.

**EDVI 468**

**Development of Educational Resources Applied to Vocational Industrial Education**

**Three Credits**

This course has been structured to provide the student with the competencies and skills needed to develop, select, evaluate, and utilize the appropriate educational resources to conduct a vocational course based on industrial and technical education. It includes techniques to ascertain quality control of products and services used to evidence a high sense of responsibility, to demonstrate knowledge of roles, as well as pride in working as an occupational educator. It provides alternatives for the development and production of educational resources that will allow students to perform with excellence.

**EDVI 469**

**Health, Hygiene and Safety in Occupational Education**

**Three Credits**

This course will present students with concepts that promote safety, health, and hygiene in the vocational workshop. It is structured so that students will be able to recognize the principal safety and accident prevention measures required when developing curriculum in the manipulative component of their field of specialization. Students will establish the difference between an accident and an incident and will demonstrate that safety is a personal commitment implying no unnecessary exposure to risks in their workplace. Students will define methods and techniques for accident prevention in industry and will select some of them to use in a research project.

**EDVI 470**

**Student Organizations**

**Three Credits**

The course centers on the development of goals, objectives, functions and purposes of student organizations.

Educational strategies in the interpretation of the role of the counselor of student organizations, professional development and the process for the organization of boards of directors for local chapters will be presented. A leadership activities plan will be incorporated to educational competencies to be developed in the vocational workshop.

**EDVI 471**

**Integration of the Adult Student to Vocational Industrial Education**

**Three Credits**

The course centers on the role of adult students in their integration to vocational and technical education, based on students' training expectations for entry into the occupational world. It includes industrial practice and skills required in different educational settings. Also included are alternatives for curriculum integration that facilitate the development of instructional units and preparation for the vocational world.

**EDVI 472**

**Organization, Supervision and Administration of the Vocational Workshop**

**Three Credits**

The course is a discussion and demonstration of functional styles for the organization, supervision and administration of equipment, tools and other educational materials used in the development of vocational and technical courses. The application of competencies developed in the course will be evaluated by means of the organization and presentation of a scale model of a workshop in each student's area of concentration.

**EDVI 473**

**Labor Relations: Implications for Vocational Industrial Educators**

**Three Credits**

This course is based on existing legislation that promotes unionization of workers in Puerto Rico. The student must examine different examples of the organization of trade unions in the public sector. Through critical analysis the student will recognize and understand current legislation and the rights of employers and employees. Positive and procedural aspects of Law No. 45 (1998) and its implications for the unionization of public employees will be discussed. The recently created law for the teaching profession (Law No. 158, enacted July 18, 1999) and the unionization of teachers is discussed.

**EDVI 474**

**Occupational Internship**

**Six Credits**

This course is aimed at strengthening the commitment of the vocational educator by keeping abreast with industrial and economic developments within the geographic area of the school where s/he works. The demands of the labor force and the regulations of the Labor Department, the needs and interests of the community, statistical data on employment opportunities, and training needs of the area of specialization will be discussed. The course includes site visits, occupational internships and practice in industry,

commerce or banking institutions related to vocational and technical area of expertise.

### **EDVI 475**

#### **The Exceptional Child in the Vocational Industrial Workshop**

##### **Three Credits**

The course is a study of provisions, security measures, assessment, alternative evaluation, and technological assistive equipment needed to provide educational opportunities to exceptional students in the vocational industrial workshop. The current categories of special education students, rights and responsibilities of the student, and the vocational teacher and adjustments needed to accommodate handicapped students in the vocational workshop are discussed.

### **FSED 105**

#### **Freshman Seminar**

##### **Three Credits**

The course is designed as a tool to assist college freshmen in achieving the adjustment needed to survive in higher education. It consists of a series of activities and educational experiences aimed at providing first-year students with the study skills needed for academic development. It also provides students with the personal skills needed in making decisions that will result in improving self-esteem, self-recognition and the desire to be successful.

### **ITAD 106**

#### **Introduction to Infants and Toddlers Education**

##### **Three Credits**

First professional course in the program sequence of the professional preparation for infants and toddler education level. The purpose of the course is to provide the educator with the opportunity to conceptualize goals and evaluate his/her strengths and weaknesses, in the light of the relevant skills to professional training of early education. It will focus on the observation and analysis of the early childhood setting, as well as the teaching and learning processes. The course involves 15 hours of clinical experience in infant and toddler centers.

### **ITAD 173**

#### **Educational Psychology Cognitive and Physical Development in the Infant and Toddler**

##### **Three Credits**

Study of the scientific and psychological foundations that describe growth and development in early childhood and their implications for the teacher and school. It discusses the changes that occur in human beings from the moment of

conception and throughout the different stages of life from a physical, cognitive, psychomotor and psychological perspective

### **ITAD 174**

#### **Child Development II: Social and Emotional Aspects**

##### **Three Credits**

This course is an overview of the social and emotional development in infants and toddlers. Conceptual and theoretical frameworks about social-emotional development to strengthen and expand the knowledge of professionals for infants and toddlers are examined

### **ITAD 222**

#### **Second language development in infants and toddlers**

##### **Three Credits**

The course discusses the development of two languages in infants and toddlers. Students will get acquainted with theories and models that explain the acquisition of two languages in a diverse cultural setting. Students will investigate and reflect upon the child environmental factors that affect their acquisition of a second language

### **ITAD 225**

#### **Methodology to design developmental environments for infants and toddlers**

##### **Three Credits**

The course discusses the role of the early childhood educational professionals in the development of creative learning environments. It will emphasize the importance of integration and application of theories that support

appropriate practices in the design of learning environments. Research investigations of infants and toddlers learning environment design will be analyzed. Field experiences will be facilitated to provide the opportunity to observe and reflect upon practice in a real setting

### **ITAD 302**

#### **Health, Security, Hygiene and Nutrition: Axes in Early Intervention**

##### **Three Credits**

The course is intended to train infants and toddlers educational professionals with the required competences regarding topics in health, security, hygiene and nutrition components of applicable to early child intervention. The course facilitates an integrated discussion of those topics to achieve children well being

### **ITAD 308**

#### **Family and Community: Bridges for the Infant and Toddler Formation**

##### **Three Credits**

The course examines the role of family and community in the physical, mental, emotional and intellectual development of the infant and toddler from birth to age three. The strengths and weaknesses, resources and needs of the family and the community regarding the development of children of preschool and primary grades are identified. The course offers alternatives for the coordination and organization of social, cultural and recreational activities that contribute to the formation of children in this age group, both in educational settings and in the community.

### **ITAD 339**

#### **Inclusion Practices in Infants and Toddlers Developmental Programs**

##### **Three Credits**

The course analyzes the needs and nature of infants and toddlers regarding appropriate inclusion practices in early childhood developmental programs. It is based on the use of criteria that determines high risk factors during evaluation and diagnosis of children with special needs. The course emphasizes in the acquisition of skills to identify those student that will require a referral to services from the special education program

### **ITAD 355**

#### **Observation techniques for the assessment of infants and toddlers**

##### **Three Credits**

Evaluation process in young children is a continuous one where observation is used intentionally to know about each

child and make decisions about how to help them in their development and learning. This course attempts to analyze the different types of monitoring and assessment techniques recommended to work with children 0-3 years. It will give emphasis to the development of objective observations to achieve the validity and reliability of the assessment or evaluation process

### **ITAD 363**

#### **Curriculum for Infants and Toddlers**

##### **Three Credits**

Study of the theories related to the development of various specialized curricula for the development of infants and toddlers. Organization, models, curriculum design and concepts that conform these curricula will be discussed. The course will provide the study and analysis of curricular content in the context of the integral development of the child. The intentional teacher concept that facilitates the curriculum for infants and toddlers will be studied

### **ITAD 401**

#### **Clinical Experiences Seminar**

##### **Three Credits**

TAD 401 is the first clinical experiences requirement in associate degree program. It includes fifteen hours campus-based seminar and 30 clinical experiences hours of direct observation and active participation in at least two different school scenarios.

### **ITAD 403**

#### **Creation and Management of Environment for Infants and Toddlers**

##### **Three Credits**

This course presents the policies and regulations governing the establishment and development of an educational center for infants and toddlers. It analyzes the knowledge and skills needed for planning, administration and coordination of these programs. During the following course issues will be discussed: factors to consider when opening a center for infants and toddlers, the laws governing the opening of a center for infants and toddlers, the spaces needed inside and outside the center, and the materials and suitable equipment; as well as administrative aspects to consider when evaluating the physical infrastructure and personnel of the center.

### **ITAD 440**

#### **Practice at Toddler's Developmental Environments**

##### **Three Credits**

Practicum course for students majoring in the infant and toddler education major. Clinical experience in which the

student applies the knowledge, skills and attitudes acquired in previous courses. The student assumes the responsibility of leading the learning process of a group of toddlers

#### **ITAD 441**

##### **Practice at infants' development environments**

##### **Three Credits**

Practicum course for students majoring in the infant and toddler education major. Clinical experience in which the student applies the knowledge, skills and attitudes acquired in previous courses. The student assumes the responsibility of leading the learning process of a group of infants.

#### **MATH 126**

##### **Fundamental Topics in Mathematics II**

##### **Three Credits**

This course includes problem-solving, set theory, logic, geometry, measurement, probability, statistics, theory of numbers, and fundamental topics for students of the Schools of Education, Humanities and Office Administration.

#### **PERT 102**

##### **Introduction to Sport Massage Techniques**

##### **Three Credits**

This class will have theoretical and practical sessions. The students will learn about concepts and history related to massage. Each concept will include the effects of massage, their benefits, indication and contraindication, as well as the importance of the student and client posture in each massage technique. The use of material and equipment that is needed in each modality will also be discussed.

#### **PERT 103**

##### **Programs for Multiple Exercises**

##### **Three Credits**

The course exposes the student to different alternate modes of training to stimulate the different physiological systems of the human body. These exercises stimulate adaptations of the cardiovascular and musculoskeletal systems, in an effective and varied way, to these exercises.

#### **PERT 104**

##### **Strategic Management for the Personal Trainer**

##### **Three Credits**

This course is intended to develop skills and knowledge necessary to develop a personal training business. Basics you should know the personal trainer, personal qualifications for successful practice as a personal trainer, mission and development work plan, how to develop an effective program of exercises appropriate and individualized.

#### **PERT 105**

##### **Advance Evaluation and Management of Athletic Injuries**

##### **Three Credits**

This course consists of theory and practice of the procedures and techniques of evaluation, assessment and value of acute and chronic athletic injuries of the human body (upper and lower extremities). Non-traumatic pathologies will be studied, as well as mechanical injuries, muscular skeletal and dermatological disorders.

#### **PERT 106**

##### **Design Programs for Cardiovascular and Strength Training**

##### **Three Credits**

This course is designed to teach students to develop, implement and evaluate training programs on strength and resistant training, the student will learn to create strategies and plan the physical loads through various systems of modern strength and resistant training. The student will have a theoretical and practical training which will develop plans to achieve an improvement in athletic performance for both collective and individual sports.

#### **PERT 107**

##### **Special Exercise Program Design**

##### **Three Credits**

The class will discuss the exercise prescription and health promotion for especial population and will use the guidelines by the American College of Sports Medicine (ACSM) and the National Strength and Conditioning Association (NSCA). The students will also learn about chronic conditions that require especial and individualize attention.

#### **PERT 108**

##### **Analyzes of Current Issues in Personal Training**

##### **Three Credits**

The course analyzes various personal training issues facing Puerto Rico and the world today. Focus is placed on the analysis and discussion of contemporary issues related to health, physical fitness, and training, and their impact in methods of personal training.

#### **PERT 109**

##### **Clinical Practicum in Personal Training**

##### **Three Credits**

This course offers the student a practical experience, which integrates with theoretical courses and is under the direct supervision of a professional. These experiences will take place during the normal working hours of the wellness center of the university. The student will participate actively in the

center, performing personal fitness duties for the university community. The student will also have active participation in administrative and organizational areas of personal fitness.

**PHED 103**  
**Track and Field**  
**Three Credits**

The course covers the history, scoring and basic skills for the different events, and offers basic skills practice.

**PHED 105**  
**Physical Fitness and Gymnastics**  
**Three Credits**

The course emphasizes the importance of gymnastic and physical exercise in the development of the human body. It involves practice of the different gymnastic skills and tests of physical fitness.

**PHED 106**  
**Basic Rhythms**  
**Two Credits**

The course covers the theory and practice of the basic rhythms used in the physical education program. It emphasizes the creation of movement patterns by students.

**PHED 107**  
**Games and Sports for Elementary School Teachers**  
**Three Credits**

The course is a study of the history and evaluation of games as a teaching vehicle. It also covers the methodology used for teaching games at the elementary level. Special attention is given to teaching techniques. It also equips the elementary school teacher with the ability to handle and control a group in an outdoor game area.

**PHED 108**  
**Tennis**  
**Two Credits**

The course covers the history, rules, scoring and elementary tactics of single and doubles games. Basic skills are practiced.

**PHED 109**  
**Swimming**  
**Two Credits**

This is a practical course in which the student learns the skills and basic styles of swimming. Water safety measures are emphasized.

**PHED 112**

**Volleyball and Basketball**  
**Three Credits**

The course covers the history, rules, scoring procedures and elementary techniques of the games, as well as practice of the different skills in volleyball and basketball.

**PHED 113**  
**Softball and Soccer**  
**Three Credits**

The course covers the history, rules, scoring, basic techniques, and strategies of the games. It offers basic skills practice and develops the ability to coordinate motion in different aspects of the game.

**PHED 201****Principles and History of Physical Education****Two Credits**

The course covers the history, objectives, and principles of physical education. Contemporary issues of physical education in different societies and cultures are also studied.

**PHED 202****Development of Motor Skills in Elementary School****Three Credits**

The course enables future teachers to develop and refine students' movement patterns. It emphasizes practice of fundamental skills to optimize their motor development, including manipulative movements, rotational, static, and dynamic stability.

**PHED 203****Organization of Simple Games****Two Credits**

The course centers on the study, analysis, and practical application of simple games, especially designed for teaching physical education in the elementary school.

**PHED 204****First Aid****Two Credits**

The course covers the application of first aid in physical education activities in school and community.

**PHED 205****Organization and Administration of Physical Education****Three Credits**

The course centers on the principles of administration and supervision of physical education programs, techniques of group dynamics, and organization of different school activities.

**PHED 206****Physiology of Exercise****Three Credits**

Fundamental aspects of physiology and its relationship to physical education are emphasized. Students will study basic concepts of muscular concentration, muscular strength, nervous control of muscular contraction, calcium dissipation in the human body, cardiovascular aptitude, resting electrocardiograms, as well as the effects of isometric exercise on heartbeat, blood pressure, and other vital functions.

**PHED 207****Physical Education of the Handicapped Child****Three Credits**

Students will study a variety of educational opportunities that allow maximum development of the individual's capacity. Special attention is given to techniques which enable children with physical and mental disabilities to participate in physical activities within the limitations of their capacities.

**PHED 208****Anatomy and Kinetics****Three Credits**

The course centers on the study of gross anatomy. It emphasizes systemic anatomy, with special attention to the muscles, bones, nerves, and articulations related to physical activity.

**PHED 209****Physical Education and Health Laws****Three Credits**

Students will study and analyze the laws and regulations regarding physical education, health and sports in Puerto Rico. Emphasis is given to case studies related to negligence, constitutional issues, and risk management. Judicial procedures and the legal foundations of administration are discussed.

**PHED 210****Health, Hygiene and Nutrition****Three Credits**

The course covers the theory and practice of the components of wellness and physical fitness lifestyles. Medical records and health risk profiles are developed and physical fitness levels are established. Students are exposed to information, activities, techniques and strategies to obtain and maintain acceptable levels of physical fitness that allow an effective life. Lifelong sports, weight control, stress management, and nutritional theories will be discussed.

**PHED 211****Sports and Games for the Elementary Level****Three Credits**

Theory and practice of strategies and foundations for the integral development of the elementary level student through physical activities and motor development. It emphasizes physical fitness, neuromuscular development, motor perception and socio-emotional development. Games and specific activities for the development of these areas are conducted.

**PHED 220**

## **Anatomy and Physiology**

### **Three Credits**

The course includes the study of gross human anatomy and the physiological changes in different body systems during physical activity. Joint movements and muscle actions are studied, as well as basic mechanical principles applied to body movements in different sports.

### **PHED 221**

#### **Motor Skills Development, Simple Games and Sports at the Elementary Level**

### **Three Credits**

The course covers the theory and practice of strategies and foundations for the integral development of the elementary level student through physical activities and motor development. It emphasizes physical fitness, neuromuscular development, social-emotional development, perception, manipulative movement, and rotational stability. Games and specific activities for developing these areas are conducted.

### **PHED 222**

#### **First Aid and Swimming**

### **Three Credits**

The course covers the theory, methodology and practice of swimming and first aid. Swimming styles, such as freestyle, backstroke, and breaststroke, are emphasized. Survival modalities such as back and side sliding are practiced as well. Basic techniques of first aid, in accordance with American Red Cross guidelines, are discussed and practiced.

### **PHED 223**

#### **Team Sports**

### **Three Credits**

The course centers on the theory and practice of team sports such as volleyball, basketball, softball, baseball, and soccer. Historical evaluations of the sports are emphasized, as are its foundations, rules, techniques, tactics, and physical conditioning. Roles of the referees and officials are discussed.

### **PHED 224**

#### **Individual Sports**

### **Three Credits**

Students will study the history, rules, techniques, and teaching methodology of tennis, as well as track and field. Rules for scoring track and field events and tennis are discussed.

### **PHED 300**

#### **Methodology and Teaching of Physical Education at the Secondary Level**

### **Three Credits**

The course centers on analysis, interpretation and implementation of the curriculum and methodology of physical education.

### **PHED 301**

#### **Methodology for Teaching Physical Education in the Elementary School**

### **Three Credits**

The course covers theory, methodology and practice of the learning process in physical education at the elementary level. It emphasizes the development of skills to integrate various pedagogical techniques in a comprehensive planned individual system. Classroom management, performance analysis, assessment and evaluation are discussed.

### **PHED 302**

#### **Administration and Organization of Physical Education at the Elementary Level**

### **Three Credits**

The course centers on principles related to the administration, organization and supervision of physical education programs at the elementary level. It emphasizes the ability to optimize teaching environments that promote learning and applying theories of administration.

### **PHED 305**

#### **The Methodology and Curriculum of Physical Education in the Elementary School**

### **Three Credits**

The course covers theory, methodology, practice, and curricular models of the learning process in Physical Education at the elementary level. Theories, curriculum types, models, designs, and concepts are analyzed and evaluated. The course emphasizes the development of skills to integrate essential pedagogical knowledge, such as a comprehensive planned individual system, classroom management, performance analysis, assessment and evaluation. The constructivist paradigm is applied during the course. Computers and their applications are used as tools in the course.

### **PHED 354**

#### **Measurement and Evaluation of Physical Education**

### **Three Credits**

The course centers on administration and evaluation of tests of strength, general motor ability, motor fitness, endurance, and skills. The course also covers testing in social development, body mechanics, and nutritional measurements, as well as somatotyping. Basic statistical techniques and design of testing methods are included.

### **PHED 355**

### **Evaluation and Investigation in Physical Education**

#### **Three Credits**

Throughout the course students gain knowledge about different techniques and methods in measurement, assessment, evaluation and investigation processes, in relation to relevant objectives in Physical Education. Data from tests are statistically evaluated by students, who are also initiated in basic research methodology.

### **PHED 356**

#### **Organization and Administration of Physical Education K-12**

#### **Three Credits**

Study of the principles related to the administration, organization and supervision of the Physical Education Program from K through 12. Emphasizes the ability to optimize the teaching environment that promotes learning and the application of administrative theories and strategies in physical education from K through 12.

### **PHED 363**

#### **Planning and Curricular Design of Physical Education**

#### **Three Credits**

The course is based on the evaluation and analysis of theories and curriculum models of physical education. It qualifies the student to implement, modify, and to design curricula that deal with various educational needs, fiscal situations and physical facilities. The course is based on the constructivist paradigm in which the teacher becomes a facilitator within the teaching-learning process. The students are encouraged to use the computer as a valuable tool.

### **PHED 447**

#### **Elementary School Practicum Physical Education**

#### **Five Credits**

The course offers students practical experience in an educational setting which represents a broad diversity of social aspects. Practice is offered over an extended period, wherein the student assumes the responsibility of teaching in a school setting under supervision of qualified personnel.

### **PHED 449**

#### **Secondary School Practicum**

#### **Five Credits**

This practical and functional course for prospective teachers involves clinical practice in teaching physical education at the secondary school level.

### **RECR 201**

### **Introduction Recreation**

#### **Three Credits**

The course will familiarize students with the relationship between recreation and leisure and the western culture. Specifically students will be introduced to the many effects that recreation has on society including, but not limited to the economic impact on leisure and recreation, recreation as a modifier of culture and recreation and leisure as it relates to life stages and health.

### **RECR 202**

#### **Leisure of Life Style**

#### **Three Credits**

The course examines the role of recreation and leisure in contemporary society. Discusses the conceptual foundations and methods of analysis from a sociological perspective on the management of leisure and lifestyle in Puerto Rico. Leisure is examined from its influence on society in their ideologies and beliefs, social institutions and the impact on different population groups.

### **RECR 203**

#### **Recreational Programing**

#### **Three Credits**

The course emphasizes the student's knowledge in the design and implementation of recreation programs from institutional and community approach to the different population groups. It focuses on areas such as social diagnosis and human development strategies in exploring alternative leadership for the creation of community recreational program offerings.

### **RECR 204**

#### **Planning and Management Recreation Facilities**

#### **Three Credits**

The course provides an opportunity for the students to analyze the planning, design, construction, management and use of public, private and commercial recreation areas and facilities.

### **RECR 205**

#### **Commercial and Tourism Recreation**

#### **Three Credits**

This course focuses on the purpose and function of the leisure delivery system in the commercial setting. Development and operation of commercial goods and service oriented businesses as well small businesses management will receive considerable attention.

### **RECR 206**

#### **Management Recreational Services**

#### **Three Credits**

The course aims to introduce students to the study of performance and recreational system problems in Puerto Rico. Emphasis on the analysis of leisure services in the public sector, private sector and nonprofit organizations provided to the communities and among different populations.

### **RECR 207**

#### **Inclusive Recreation**

##### **Three Credits**

This course is based on the promotion of concepts, methods and strategies related to recreation services for special population. It emphasizes an inclusive approach in the various community recreation programs.

### **RECR 300**

#### **Leadership and Supervised Recreational System**

##### **Three Credits**

This course will provide students with the opportunity to learn about leadership and methods of leading recreation activities. The course will focus on theory, technique and application of personal leadership skills in a recreation setting. Leadership as a field of study and personal development will be emphasized allowing each student to experience leadership in a recreational environment.

Students will be introduced to leadership styles, characteristics, and practices including group dynamics and direct service leadership methods.

### **RECR 301**

#### **Evaluation and Research Recreation**

##### **Three Credits**

The course aims to introduce students to methods of applied research and evaluation of recreation. It emphasizes action research on problems of institutional and community recreation in Puerto Rico.

### **RECR 400**

#### **Seminary Recreational Practice**

##### **Three Credits**

The Recreation Practice seminar will provide students with practical experience and professional future of recreation in an agency to provide services in any sector of the recreation system in Puerto Rico.

### **SHED 101**

#### **Foundations of Health Education**

##### **Three Credits**

The course Foundations of Health Education studies the historical development of the Health Education Promotion disciplines: its philosophy, goals, and objectives. The most common models of health education are discussed.

Educational principles, strategies, and methods used in the discipline are presented. Emphasis is placed on group work for planning health activities during health learning process.

### **SHED 102**

#### **Health, Life and Well Being**

##### **Three Credits**

The course of Health, Life and Well-being is design to facilitate in the students the acquisition of the basic concepts of health. Theories such as Health Belief Model, Theories of Reasoned Action, and others, are discussed. The fundamental purpose of this course is to foster in the desire to actively use their own reality and experience to develop the necessary skills for making informed decisions to live healthy lifestyles from the holistic perspective of health and well-being. It is expected that the students carry on an auto evaluation to make the necessary modifications towards a healthier life. In addition, students are provided the opportunity to participate in various activities that allow them to develop the skills that will help them to value their health and make responsible decisions that promote healthy life style.

### **SHED 103**

#### **Prevention and Control Illness and Disorders**

##### **Three Credits**

The course of Disease Prevention and Control is designed to facilitate in the students the acquisition of basic knowledge of the illness process and its cause. The fundamental purpose of this course is to foster in the students the desire to actively use their own reality and experience to develop the necessary skills for making informed decisions to live healthy lifestyles from the holistic perspective of health and well-being. It is expected that the students carry on an auto-evaluation to make the necessary modifications to keep themselves illness free or to effectively manage existent health conditions.

### **SHED 104**

#### **Health and Safety**

##### **Three Credits**

The course of Health and Security provides the students the opportunity to develop the capacity of interpret information about promotion of security. The course includes discussion of habits that promotes security, basic rules to avoid or minimize the possibility of accidents and disasters, and the correct way to handle those situations. Also, the students will gain understanding of the promotion of security rules and the appropriate procedures of first aid and cardiovascular pulmonary resuscitation (CPR). Students will be prepared to be certified on the field and develop plans to face natural disasters.

**SHED 105****Human Sexuality****Three Credits**

The course Human Sexuality is framed within the Constructivist Theory and provides students with the opportunity to examine their beliefs, values and attitudes about the topic. Also, students participate in various activities that foster the acquisition of knowledge required to value and make responsible decisions about the kind of sexuality that promotes healthy life styles. Topics discussed in this course are gender construction, orientation or sexual preference, sexual education, and sexually transmitted diseases, among others.

**SHED 106****Mental Health in the School Context****Three Credits**

Introduction to the principles and theories of positive mental health and human behaviors. Topics include emotional responses, coping mechanisms, and therapeutic communication skills in the school context. Team work is emphasized in planning of mental health activities and in appropriate educational processes aimed at promotion of student emotional well-being.

**SHED 107****Environmental Health in the School Context****Three Credits**

The Environmental Health course examines the physical, social and biological components of the ecological system. The course is designed to promote the student's acquisition of the basic knowledge of environmental pollution and its effect on natural resources. Furthermore, various environmental control strategies to promote human being's health and well-being are discussed.

**SHED 108****Gerontology in the School Context****Three Credits**

The course is an introduction to gerontology concepts with focus on the school context. The human life cycle is presented through the physical, social and emotional changes that occur in the aging process. The course also examines sexuality, retirement, depression and other psychological and sociological issues of the elderly including stereotypes and social prejudices.

**SHED 109****Teaching Methodology for Health Education****Three Credits**

The activities contained in SHED 109 offer the student a rich constructivist perspective. In the course the student examines the curricular models and approaches for the teaching of health in school, standards, general learning perspectives by grades, curricular framework, and the Health School Program operational policies. The teaching of health requires the student revision of the basic content, methodology of teaching, planning, and evaluation of learning. Also the student analyses the importance of skills and attitudes development in health teaching. Through course activities the student will develop intellectual skills that will enable him to investigate, content adaptation, resources evaluation to address the needs and interests of the students as well.

**SIGN 101****Visual-Gestural and Body Language Communication****Techniques****Three Credits**

This course focuses on nonverbal aspects of communications, which are an integral part of communication in all sign languages. Emphasis is given to the use and understanding of facial expressions, gestures, pantomime, and body language. The students will develop their visual readiness and ability to think in pictures instead of words. The focus is on using the body, the face, and the hands to communicate meaning.

**SIGN 102****Sign Language I: Foundations, Spelling and****Numbers****Three Credits**

The course is designed for the student who does not have previous Sign Language experience. The purpose of the course is to develop receptive and expressive skills directed towards the development of basic dialogue, and is taught in a functional scenario. The dialogues are geared to conversations related to daily interactions: introducing oneself, exchanging personal information, talking about the surroundings, and indicating where one lives. Students will also learn about the deaf community and its culture.

**SIGN 102 – L****Sign Language I: Foundations, Spelling and****Numbers Lab****One Credit**

The course is designed for the student who does not have previous Sign Language experience. The primary purpose of the course is to develop receptive skills and expressive skills, directed towards the development of basic dialogue, and is taught in a functional scenario. Development of strong skills

in finger spelling and numbering is also emphasized. The dialogues will be geared to conversations related to daily interactions: introducing oneself, exchanging personal information, talking about the surroundings, and indicating where one lives. Students will also learn about the deaf community and its culture.

### **SIGN 103**

#### **Sign Language II: Conversations**

##### **Three Credits**

The course is designed for the student who has previous Sign Language experience. The purpose of the course is to develop abstract concepts and to teach students to express themselves about issues outside the classroom setting. In this course students will also develop narratives and learn how to locate objects and persons. The students will have the opportunity of learning cultural aspects of the deaf community. They will also learn conversational strategies and how sign language users maintain each others' attention.

### **SIGN 103 L**

#### **Sign Language II: Conversations Lab**

##### **One Credit**

The course is designed for the student who has previous Sign Language experience. The purpose of the course is to develop abstract concepts and to teach students to express themselves about issues outside the classroom setting. In this course they will also develop narratives and learn how to locate objects and persons. The students will have the opportunity of learning cultural aspects of the deaf community. They will also learn conversational strategies and how sign language users maintain each others' attention.

### **SIGN 104**

#### **Sign Language III: Narratives**

##### **Three Credits**

The course is designed for the student who already has Sign Language skills. The purpose of the course is to develop the linguistic abilities necessary to explain ideas or concepts, describe how and why things are, and how they work. The course will help students develop the ability to translate from written text to Sign Language. The students will use Sign Language to express experiences, stories, and other aspects of a narration. Information about the linguistic vocabulary and cultural aspects and will be presented using Sign Language as the primary language and Spanish as the secondary language.

### **SIGN 104 L**

### **Sign Language III: Narratives Lab**

##### **One Credit**

The course is designed for the student who already has Sign Language skills. The purpose of the course is to develop the linguistic abilities necessary to explain ideas or concepts, describe how and why things are, and how they work. The course will help students develop the ability to translate from written text to Sign Language. The students will use Sign Language to express experiences, stories, and other aspects of a narration. Information about the linguistic vocabulary and cultural aspects and will be presented using Sign Language as the primary language and Spanish as the secondary language.

### **SIGN 106**

#### **Visual gestural communication and Classifiers**

##### **Three Credits**

This course will develop Sign Language skills through the use of descriptive classifiers and non-manual signals. It will assist the student in acquiring fluent fingerspelling and the use of visual receptive and expressive skills. It will also provide concentrated instruction and practice in cardinal and ordinal numbers as well as number incorporation. A brief history of the different manual alphabets used in different countries will be included.

### **SIGN 106 – L**

#### **Visual gestural communication and Classifiers Lab**

##### **One Credit**

This course will develop Sign Language skills through the use of descriptive classifiers and non-manual signals. It will assist the student in acquiring fluent fingerspelling and the use of visual receptive and expressive skills. It will also provide concentrated instruction and practice in cardinal and ordinal numbers as well as number incorporation. A brief history of the different manual alphabets used in different countries will be included.

### **SIGN 122**

#### **Sign Language Discourse**

##### **Three Credits**

This course will help students to gain an understanding of discourse, and to recognize features of discourse used in American and Puerto Rican Sign Language, such as register, spatial mapping, prosody, discourse structures, rhetorical analysis, involvement and interaction strategies, as well as coherence and cohesion, and framing. Students will enhance their own use of American and Puerto Rican Sign Language through incorporation of those features. The laboratory will provide an interactive experience in environments in which the students will have the

opportunity to observe features of American and Puerto Rican Sign Language discourse that are explored in class.

### **SIGN 203**

#### **Introduction to Sign Language Interpreting**

##### **Three Credits**

This course will provide students the opportunity to know the history of interpretation, the terminology used in the field and the competence that a sign language interpreter needs to have. Students will also learn basic ethical concepts, dress codes and the diverse work scenarios. During the semester, students will have the opportunity to watch demonstrations in the classroom and to discuss different cases.

### **SIGN 302**

#### **Ethical and Professional Principles in Interpreting**

##### **Three Credits**

Interpreters are often in situations that may conflict with their own value systems. This course will provide an exploration of the personal ethics and values that influence the decision-making process. Students will: identify the source of conflicts; analyze the situation from the perspectives of the deaf clients, agency and interpreter, and make recommendations for action. Students will examine moral considerations and ethical systems, address power relationships between the non-deaf interpreter and the Deaf Community, and incorporate their impact in functioning as facilitators of communication. Students will use case studies to explore issues, make recommendations and discuss the consequences of each decision.

### **SIGN 400**

#### **Simultaneous Interpretation**

##### **Three Credits**

This hands-on course will provide in-depth study and practice of interpretation through the understanding and use of the simultaneous model of interpretation. Students will further develop requisite skills such as text analysis, mind mapping/visualization, multi-tasking strategies, prediction and anticipation. Furthermore, they will be exposed to process management skills and will enhance their use of tools for self-analysis and peer feedback. Skills in both voice-to-sign and sign-to-voice will be studied and practiced during class work.

### **SIGN 401**

#### **Interpretation Internship I**

##### **Three Credits**

This hands-on course will provide in-depth practice of Sign Language interpretation through the understanding and use of consecutive and simultaneous modes of interpretation

and transitioning to real life scenarios. Students will build skills and knowledge in live settings through continued practice of discourse analysis, visualization, process management skills and tools for self-analysis and peer feedback. Students will be assigned to various scenarios to practice voice-to-sign and sign-to-voice skills with various levels of complexity and registers.

### **SIGN 402**

#### **Interpretation Models**

##### **Three Credits**

This course will provide further in-depth study and practice of Sign Language interpretation through the understanding and use of the simultaneous mode of interpreting. Students will focus on both individual and team interpreting and will work with selected team mates in two separate rotations. They will compare transliteration and interpretation and will practice both methods. Students will also review the business of interpretation and the settings in which interpreters work, as they prepare to begin working in the field as interpreters. Deaf individuals will be invited to class to participate as the audience for interpreting practice.

### **SIGN 405**

#### **Interpreting Idioms and Culture**

##### **Three Credits**

This course is designed to enable the interpreting student to list and study many of the different cultural idioms in Puerto Rico and other Spanish-speaking communities. Through the use of comparison and analysis of traditional and typical phrases, the student will be able to look for meaning in various contexts. This course will help the student with the development of analytic thinking to be used in any interpreting situation of idiomatic phrases. The student will also analyze songs, poetry and theater. Students will have both didactic and practice experiences in the classroom.

### **SIGN 407**

#### **Educational Settings Interpretation**

##### **Three Credits**

This course is designed for the advanced interpreting student. The purpose of the course is to increase the knowledge of interpreting students who wish to work in the education field. Students will have the opportunity to know the laws that apply to consumers and to interpreters at the different levels of education. Students will have the opportunity to learn about the administrative processes of special education, including COMPU meetings and PEI development. They will learn the vocabulary related to school assignments in the elementary, intermediate, secondary, and university levels.

**SIGN 416****Psychosocial Aspects of Deafness****Three Credits**

This course will study the psychological, emotional and social impact of hearing loss throughout the cycle of life. The role of the interpreter as a non-professional advocate in the rehabilitation process of people who have hearing loss and their families will also be considered.

**SPED 214****Assistive Technology in Special Education****Three Credits**

Students will study methodologies, techniques and innovative strategies needed to teach special education students effectively. Emphasis is placed on current research, identification of needs of exceptional children that can be met through use of computers, evaluation and prescription of software, hardware, and assistive devices.

**SPED 216-217****Teaching Reading and Writing to Students with Disabilities I and II****Three Credits**

The course is an analysis of strategies, techniques and methods used to teach reading and writing to students with disabilities. It includes the study of instruments to diagnose, assess and prepare individualized educational programs. Materials preparation, using the computer to teach writing, as well as diagnostic and remedial teaching of writing skills are also included.

**SPED 218****Methodology for Teaching Mathematics in Special Education****Three Credits**

The course is an analysis of the curriculum content in mathematics from K-11 with special emphasis on adaptations, methodology and assessment strategies for students with disabilities.

**SPED 301****Nature and Needs of the Mildly Handicapped****Three Credits**

The course centers on research, observation, analysis and discussion of the needs of the mildly handicapped. It emphasizes the establishment of levels of comparison with the "normal" child. The course includes demonstrations and

practice. Participatory experience equivalent to ten hours of clinical experience will be required.

**SPED 304****Nature and Needs of the Severely Handicapped****Three Credits**

A comprehensive study of the natural development (physical and psychological) and technical needs of the severely handicapped, as well as corrective and/or rehabilitation methods for them. The course emphasizes teaching methodology and curriculum.

**SPED 305****The Family and the Education and Counseling of Children with Special Needs****Three Credits**

The course covers principles and processes in individual and group programs for parents of children with special needs in school, day care, and residential settings. It includes topics such as family therapy, parent education, and the parent-school relationship.

**SPED 307****Pre-Vocational and Vocational Education****Three Credits**

The course covers pre-vocational competences to be developed by the severely handicapped. Emphasis is placed on the development of skills needed in the work environment, such as oral expression, following instructions, using the telephone, money and exchange, survival vocabulary, simple systems of weights and measures, and simple rules for the world of work. Personal grooming, appearance, punctuality and responsibility are also emphasized. The course includes visits and clinical experience in pre-vocational and rehabilitation centers.

**SPED 310****The Emotionally Disturbed Child in the Classroom****Three Credits**

The course centers on the nature of children who have emotional problems, as well as their social, psychological and educational needs

**SPED 311****Services and Education for the Handicapped Child****Three Credits**

The course is an analysis of current civil rights legislation regarding the disabled in Puerto Rico and the United States. It emphasizes application of legislation and repercussions in the courts. It includes clinical experiences, including research, planning, and educational work with parents.

**SPED 312****Education of Children with Specific Learning Disabilities****Three Credits**

The course centers on basic learning disabilities due to minimal brain damage such as: aphasia, dyslexia, dystrophia, and dyscalculia. It also covers psychosocial, motor, perceptual and linguistic development, as well as special educational experiences of the child with these conditions. Emphasis is placed on diagnostic skills. Participatory experiences equivalent to ten hours of clinical experiences will be required.

**SPED 315****Teaching Exceptional Children****Three Credits**

This introductory course in special education centers on the analysis of social, emotional and educational needs of children with different exceptional qualities. It includes diagnosis; educational and rehabilitation services; family and community attitudes, and civil rights. Emphasis is placed on the educational needs and learning styles of exceptional children, teaching methods, techniques and curricular content.

**SPED 316****Education of the Deaf Child****Three Credits**

The course centers on basic principles of teaching the deaf child, as well as the psychology of children with hearing impairment. Participatory activities equivalent to ten hours of clinical experience will be required.

**SPED 317****Education of Mildly Retarded Children****Three Credits**

The course covers causes, manifestations, problems, and identification of mental retardation. It includes characteristics and education of educable retarded children and adolescents. Topics include teaching techniques, educational approaches, curriculum, and physical facilities. Participatory experiences equivalent to ten hours of clinical experience will be required.

**SPED 318****Education of Children with Severe Mental Retardation****Three Credits**

The course centers on causes, manifestations, problems, and identification of children at a trainable level of mental

retardation. Topics include characteristics and education of trainable mentally retarded children and adolescents. Teaching techniques, educational approaches, curriculum, and physical facilities are also covered.

**SPED 319****Psychology of the Deaf Child****Three Credits**

The course is a comprehensive study of the history, psychology, educational and vocational opportunities, attitudes and social organizations pertaining to deaf children.

**SPED 324****Behavior Modification of the Handicapped Child****Three Credits**

The course offers basic knowledge of the nature, psychosocial, and educational needs of the child with severe emotional disturbances. Topics emphasized include mutes, infantile schizophrenia, phobic neuroses, and educational handling of children with these conditions in a special classroom. The course includes clinical experience.

**SPED 327****Teaching Communication to the Deaf Child****Three Credits**

The course is a comprehensive study of different approaches to teaching communication to deaf children, as well as the advantages and disadvantages of these approaches. It includes practice of the methodology of each approach.

**SPED 337****Curricular and Methodological Adaptation for Children with Cerebral Palsy and other Muscular-Skeletal Problems****Three Credits**

The purpose of this course is to equip the prospective special education teacher with basic knowledge relevant to the nature and educational needs of the children with cerebral palsy and other muscular-skeletal conditions. Topics include the children's learning disabilities, strategies used in their education, and necessary curricular adaptations.

**SPED 338****Diagnosis and Prevention of Hearing Disabilities****Three Credits**

The course aims to equip the prospective teacher of exceptional children, specifically deaf children, with technical knowledge regarding this complex condition. Classification, anatomy and physiology of the hearing mechanism, diagnostic and rehabilitation tools and preventive methods are studied. Deafness and the hearing process are analyzed.

**SPED 339****Management of At-Risk Children or Children with Developmental Deficiencies****Three Credits**

The course centers on the nature and needs of handicapped infants, toddlers and preschool children. Concepts and factors in determining which children are potentially at risk of needing special education services are examined. Emphasis is placed on diagnosis, evaluation, teaching techniques, adaptation of the curricula, and strategies for early intervention of children with developmental deficiencies.

**SPED 340****Language Disorders due to Neurological Damage****Three Credits**

The course provides the prospective teacher of exceptional children with basic knowledge of neurolopedic and psycholinguistic functions that enable identification, handling and stimulation of the child with language disorders due to brain damage. Topics include theories of language formation and the study of encephalic development, as well as its logopedic functions.

**SPED 341****Psychology and Education of the Legally Blind****Three Credits**

The course provides the prospective special education teacher with the knowledge necessary to teach the blind child. Emphasis is placed on Braille, reading and writing, longhand, as well as the use of traditional methods and recent innovations in the field of education of the blind.

**SPED 342****Education of the Child with Superior Intelligence****Three Credits**

The course provides the prospective special and regular education teacher with the knowledge needed to deal with the social, psychological and educational needs of the gifted child. Emphasis is placed on the child's problems in adjusting to the regular curriculum and strategies for the child's education.

**SPED 349****Methods and Techniques for the Education of****Students with Hearing Impairments****Three Credits**

This course includes the study of skills and knowledge needed to evaluate students with hearing impairments, as well as an examination of emerging technology for sound amplification. Different programs for auditory training are also discussed, and methods and techniques for aural rehabilitation are analyzed. Topics include educational approaches used to help children with hearing impairments succeed in school and to improve their social skills.

**SPED 360****Methodology for the Teaching of Exceptional Children****Three Credits**

The course centers on characteristics and learning styles of the exceptional child; evaluation and educational prescription; special equipment and teaching materials; educational technology and its adaptation to the exceptional child; curriculum adaptation; preparation of objectives, and daily, individualized teaching plans. Emphasis is placed on demonstrations and practice.

**SPED 445****Special Education Practicum: Speech, Language and the Hearing Impaired****Five Credits**

The course emphasizes laboratory experiences in which the student teacher practices knowledge acquired in special education courses. Student teachers assume responsibility for teaching a group of students at the level, grade, and exceptionality for which they have prepared.

**SPED 446****Special Education Practicum: The Mildly Impaired****Five Credits**

This is a practicum course for students whose major is the teaching of special education of the mildly impaired at the secondary level. Student teachers will participate in real educational settings to practice knowledge acquired in

education courses, and will gradually assume the responsibility of teaching in a real classroom.

**SPRT 101****Sport Pedagogy****Three Credits**

The course centers on the study of the theory and practice of the process of sports teaching and learning, particularly on tactical and technical aspects, as well as on mental skills. It emphasizes knowledge of the means and teaching methods of sports skills through the organization of a training session for children and young athletes.

**SPRT 102****Methodology for Training****Three Credits**

The course centers on the study of the principles and methods of training used for sports practice involving children and young persons. Emphasis is on achieving an understanding of the theoretical perspectives, the capacity for sports performance, the phases of sports formation, the demands of controls and competitions involving children and young persons.

**SPRT 103****Physiology for Sport Fitness Performance****Three Credits**

The course centers on the study of the biological bases of the effects of physical exercise in training of children and youths. Basic principles are established for improving physical capacities with a focus on the prevention of the inconveniences caused by excessive loads in sports training. The biological bases of the effects of physical exercise in the training of children and youths are also established.

**SPRT 104****Methodology of Physical Training****Three Credits**

The course centers on the study of the means and methods for conditioning physical capacities and coordination during sports preparation of young and child athletes. The course offers orientation in the planning and organization of optimum training loads according to the phases of biological maturation.

**SPRT 105****Philosophical and Ethical Principles for Coaches****Three Credits**

The course centers on the study of the ethical and philosophical principles that guide the behavior of coaches. Emphasis is placed on how coaches' compliance is vital for the successful integral development of children and youths, and their motivation towards sports practice. The course

also emphasizes that students understand that the development of a code of ethics and social responsibility results in the development of equity, inclusion and solidarity in sports programs.

#### **SPRT 106**

##### **Fundamental Analyses of Sport Movement**

##### **Three Credits**

In this course, students will study the fundamentals in order to understand the analysis of the mechanics of movement in sports. Students will analyze the techniques of a sport and how to utilize that knowledge to improve performance and skills, as well as to identify and correct errors in the athlete's execution.

#### **SPRT 107**

##### **First aid for Specific Sport Injuries**

##### **Three Credits**

The course centers on the study of the bases and guides for intervention protocols in emergency situations, that is, in case of specific injuries during sports practice. Emphasis is on the management of a series of prevention strategies to reduce sports injuries, the reduction of the risks during practice, and the development of a contingency plan.

#### **SPRT 108**

##### **Sport Management for Coaches**

##### **Three Credits**

The course centers on the study of the organization and administration of sports programs for children and youths.. Emphasis is placed on devising a strategy that is compatible with the philosophy and objectives that support the integral development of children and young persons. Topics include establishment of health risks in sports programs, and reducing negligence, as well as planning for the growth of economic support and the organization of sports events.

#### **SPRT 109**

##### **Concepts of Sport Psychology**

##### **Three Credits**

The course is an introduction to the study of the behavior of athletes in terms of motivation and learning. Topics include management of the anxiety, relaxation techniques, planning and mental training.

#### **SPRT 110**

##### **Sport Coaching Practicum**

##### **Three Credits**

The course includes an internship in the field of sports in a club or community federation for children and youth. Emphasis is placed on planning the training sessions, organization of practices, and teaching technical skills and tactics, as well as the proper application of physical loads.

# ING. JOSÉ DOMINGO PÉREZ SCHOOL OF ENGINEERING

## OVERVIEW OF THE SCHOOL OF ENGINEERING

Recognizing the need for engineering professionals in Puerto Rico's accelerating economic environment, the AGMUS Board of Trustees approved in August 1990, the establishment of a School of Engineering at Universidad Ana G. Méndez-Recinto de Gurabo.

The School of Engineering started with an initial enrollment of 75 students in Academic Year (AY) 1990-91 and currently offers associate degrees in technology, baccalaureate programs in Mechanical Engineering, Electrical Engineering, Computer Engineering, Civil Engineering (as of 2013) and Industrial and Management Engineering, and a Master's degrees in Administration of Telecommunications and Network Systems and in Mechanical Engineering (with specializations in Alternative Energy and Aerospace Engineering), Computer Engineering, and Electrical Engineering.

Presently, the School has over 500 students in Associate Degree Programs, over 900 in Bachelor's Degree Programs and over 50 in Master's Programs.

The School is committed to the success of every student and pursues this goal by offering small classes taught by highly qualified faculty, a wide range of student services, modern facilities and equipment, and opportunities for undergraduates to participate in faculty-directed research, special design projects and industrial internships.

The School of Engineering is housed in the modern Sandia National Laboratories Engineering building, named in recognition of the support provided by the U.S. Department of Energy. This facility includes classrooms, instructional and research laboratories, offices for faculty and staff, meeting and conference rooms, a student study room, and offices for Student Association Chapters. It was occupied in August, 1992. The building was expanded in 1998 to house seven Electrical Engineering laboratories designed for instructional and research use. The building is equipped with 62,000 square feet including a 13,000 square foot expansion completed in 2009. In 2012, the main computer center of the SOE was remodeled to include four office spaces for tutoring as well as 50 new computers. In 2014 a new 1,800 ft<sup>2</sup> facility was built adjacent to the machine shop to provide premium spaces for student projects such as the SAE Minibaja, SAE Formula, and capstone projects. In addition, construction started on a new 5,000 ft<sup>2</sup> civil engineering wing to accommodate its laboratories and classrooms.

The School of Engineering has four academic departments:

- Department of Mechanical Engineering
- Department of Electrical and Computer Engineering
- Department of Industrial and Management Engineering □ Department of Civil Engineering

The School of Engineering offers five baccalaureate programs:

- B.S. in Mechanical Engineering
- B.S. in Electrical Engineering
- B.S. in Industrial and Management Engineering
- B.S. in Computer Engineering
- B.S. in Civil Engineering

## SPECIALIZED ACCREDITATIONS



Engineering  
Accreditation  
Commission

Baccalaureate programs in Mechanical Engineering, Electrical Engineering, Computer Engineering, and Industrial and Management Engineering and Civil Engineering are accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

## VISION

The vision of the School of Engineering is to become the school of choice for all students interested in a technology or engineering degree, and to be recognized for its excellence in teaching and research.

## MISSION

To provide our students at all degree levels, associate, bachelor and graduate, with an excellent education that allows them to become competitive at a national level in their chosen field of expertise, and responsive to the needs of their communities.

To serve the community through scholarly activities at the pre-college and college levels, through research and development, and through programs that serve the needs of industry.

## Technology Curriculum

The JDP School of Engineering offers academic programs leading to Certificate degrees in Electrical Technology and Renewable Energy, and Computer Technology and Networks, Associate degrees in Mechanical Engineering Technology, Electronic Engineering Technology, Quality Control Engineering Technology, Plastic Engineering Technology and Computer Technology and Networks.

These curricula provide the student with the necessary skills in mathematics, science, and communications to pursue a technical career successfully.

The program curricula of the Engineering Technology have many aspects in common. The content of the first two semesters are one hundred percent similar. Students will find that both written and oral communication skills are emphasized in all programs.

The full-time associate degree students who follow the recommended course schedules can complete the computer technology or engineering technology curriculum in 4 semesters (2 years) Students of the certificate in Computer and Network Technology can complete their program in a period of eighteen months, while students of the Certificate Program in Electrical Technology and Renewable Energy will be able to do it in one-year. Program duration for part-time and transfer students will vary, based upon course load and previous course work.

## Academic Advising

All technology students are referred to the Engineering Advising Office to assure proper course sequence with respect to Requisites. The Technology Advising Sheet (please refer to the end of the catalog for a copy) is used for this purpose. As a supplemental activity, all technology students are encouraged to visit the director of technology programs to discuss progress, academic goals, career goals and professional aspects of the technology programs.

## Course Policy

### Requisites

The JDP School of Engineering enforces the Requisites in its Certificate and Associate degrees curriculum. Students who register for a course for which they do not have the necessary Requisites will be dropped from the course before the end of the term, and will be assigned a grade of WA.

## Graduating Student Profile

Students that complete any of the technology programs at the Universidad Ana G. Méndez-Recinto de Gurabo develop, as a minimum, the following characteristics:

- An ability to apply knowledge of mathematics, science, and technology
- An ability to repair systems, components, or processes to meet desired needs
- An ability to function in multidisciplinary teams
- An ability to analyze and interpret data
- An understanding of ethical responsibility
- An ability to communicate effectively
- A recognition of the need for, and an ability to engage in life-long learning
- A knowledge of contemporary issues • An ability to use the techniques, skills, and modern tools necessary for technical practice

## INSTITUTE OF ENGINEERING TECHNOLOGY

**Nelson Martínez Ortiz**, Director  
MEME, Universidad Politécnica de Puerto Rico

The Institute of Technology is a division of the JDP School of Engineering (JDP SOE) and is supervised by the Dean of Engineering with the aid of a program director. In general, graduates from this program will have a theoretical and practical knowledge of the rapidly changing world of technology. The curriculum also provides for developing the student's knowledge and skills in data analysis, problem solving, computer applications and effective communication in English and Spanish. Graduates will also have the necessary educational background to continue studies towards an Associate or Bachelor's degree in a related engineering area.

## FACULTY

**Nelson Martínez** / Instructor  
MEME, Universidad Politécnica de Puerto Rico

**Andrés Lorán** / Assistant Professor  
MS, Universidad Politécnica de Puerto Rico

## PROGRAMS OF STUDY

## ASSOCIATE DEGREE IN ELECTRONIC ENGINEERING TECHNOLOGY

The program focuses on the major areas of computer, instrumentation and communication systems. Graduates will also have the necessary educational background to continue studies towards a Bachelor's Degree in Electrical Engineering.

### Vision of the Electronic Engineering Technology Program

To become the number one choice for all motivated students who wish to pursue an electronic engineering technology education in Puerto Rico.

### Mission of the Electronic Engineering Technology Program

To prepare electronic engineering technology graduates professionally, so that they will be capable of fulfilling the technological needs of society and excel in the installation, troubleshooting and maintenance of electronic systems.

### Objectives of the Electronic Engineering Technology Program

1. To help fulfill the need for technicians in the field of electronic engineering.
2. To deliver instruction using current technology, the most modern equipment, test instruments and computers.
3. To ensure the intellectual development of students enrolled in the program.
4. To develop technicians capable of undertaking leadership roles in professional, civic and social environments.

## ASSOCIATE DEGREE IN ELECTRONIC ENGINEERING TECHNOLOGY

<b>Total Credits</b>	<b>58</b>
<b>General Education Courses</b>	<b>28</b>
<b>Core Courses</b>	<b>10</b>
<b>Concentration Courses</b>	<b>16</b>
<b>Electives Courses</b>	<b>4</b>

<b>General Education Courses</b>			<b>28</b>
ENGL 152	Fundamentals of Reading and Writing	3	
ENGL 153	Advanced Communicative English	3	
ENGL 231	Research and Writing	3	
SPAN 152	Fundamentals of Reading and Writing	3	
SPAN 250	Writing Techniques	3	
MATH 121	Intermediate Algebra	3	
MATH 151	Algebra and Trigonometry I	4	
SOSC 111	Individual, Community, Government		

	and Social Responsibility I	3
HUMA 111	Civilizations and Universal Culture I	3

<b>Core Courses</b>		<b>10</b>
FSEN 100	Introduction to Engineering Technology	
3 ECTE 122	Introduction to Computer Programming	
3 MATH 152	Algebra and Trigonometry II	4

<b>Concentration Courses</b>		<b>16</b>
EETE 220	Fundamentals of DC/AC Electronics	3
EETE 220L	Lab. of Fundamentals of DC/AC Electronics	1
EETE 225	Fundamentals of Digital Logic	3
EETE 225L	Lab. of Fundamentals of Digital Logic	1
EETE 230	Principles of Electronic Communications	3
EETE 230L	Lab. of Principles of Electronic Communications	1
EETE 250	Fundamentals of Electronic Instrumentation & Calibration	3
EETE 260	Review for License Examination of Electronic Technology	1
<b>Electives Courses</b>		
4 MATH 221	Calculus I	4
CTEC 222	Principles of Computers, Peripherals and Operating Systems	4

## ASSOCIATE DEGREE IN MECHANICAL ENGINEERING TECHNOLOGY

The program emphasizes the analysis, installation, estimating, troubleshooting, and maintenance of new and existing mechanical systems. Graduates will also have the necessary educational background to continue studies towards a Bachelor's degree in mechanical engineering.

### Vision of the Mechanical Engineering Technology Program

To become the first choice for all motivated students who wish to pursue a mechanical engineering technology education in Puerto Rico.

### Mission of the Mechanical Engineering Technology Program

To prepare mechanical engineering technology graduates professionally, so that they will be capable of fulfilling the

technological needs of society and excel in the installation, troubleshooting and maintenance of mechanical systems.

### Objectives of the Mechanical Engineering Technology Program

1. To deliver instruction using current technology, the most modern equipment, test instrument and computers.
2. To help fulfill the need for technicians in the field of mechanical engineering.
3. To ensure the intellectual development of students enrolled in the program.
4. To develop technicians capable of undertaking leadership roles in professional, civic and social environments.

### ASSOCIATE DEGREE IN MECHANICAL ENGINEERING TECHNOLOGY

<b>Total Credits</b>	<b>58</b>
<b>General Education Courses</b>	<b>28</b>
<b>Core Courses</b>	<b>10</b>
<b>Concentration Courses</b>	<b>16</b>
<b>Electives Courses</b>	<b>4</b>

#### General Education Courses 28

ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
MATH 121	Intermediate Algebra	3
MATH 151	Algebra and Trigonometry I	4
SOSC 111	Individual, Community, Government and Social Responsibility I	3
HUMA 111	Civilizations and Universal Culture I	3

#### Core Courses 10

FSEN 100	Introduction to Engineering Technology	3
3 ECTE 122	Introduction to Computer Programming	3
MATH 152	Algebra and Trigonometry II	4

#### Concentration Courses 16

ENGI 161	Engineering Technology Graphics	3
METE 235	Fundamentals of Properties of Materials	3
METE 235L	Lab. of Fundamentals of Properties of Materials	1
METE 233	Fundamentals of Refrigeration and Air Conditioning	3

METE 233L	Lab. of Fundamentals of Refrigeration and Air Conditioning	1
METE 245	Fundamentals of Manufacturing Processes Technology	3
METE 245L	Lab. of Fundamentals of Manufacturing Processes Technology	1
METE 247L	Laboratory of Fundamentals of Welding	1

#### Electives Courses 4

### ASSOCIATE DEGREE IN QUALITY CONTROL ENGINEERING TECHNOLOGY

The program focuses on areas of quality assurance for industrial or service environments. Graduates will also have the necessary educational background to continue studies towards a Bachelor's Degree in Industrial and Management Engineering.

#### Vision of the Quality Control Engineering Technology Program

To become the number one choice for all motivated students who wish to pursue an education in the field of quality control engineering technology in Puerto Rico.

#### Mission of the Quality Control Engineering Technology Program

To prepare quality control engineering technology graduates professionally, so that they will be capable of fulfilling the technological needs of society and excel in the maintenance and improvement of quality systems.

#### Objectives of the Quality Control Engineering Technology Program

1. To deliver instruction using current technology, the most modern equipment, test instruments, and computers.
2. To help fulfill the need for technicians in the fields of quality assurance.
3. To ensure the intellectual development of students enrolled in the program.
4. To develop technicians capable of undertaking leadership roles in professional, civic and social environments.

**ASSOCIATE DEGREE IN QUALITY CONTROL  
ENGINEERING TECHNOLOGY**

<b>Total Credits</b>	<b>55</b>
<b>General Education Courses</b>	<b>28</b>
<b>Core Courses</b>	<b>10</b>
<b>Concentration Courses</b>	<b>13</b>
<b>Electives Courses</b>	<b>4</b>
<b>General Education Courses</b>	<b>28</b>
ENGL 152 Fundamentals of Reading and Writing	3
ENGL 153 Advanced Communicative English	3
ENGL 231 Research and Writing	3
SPAN 152 Fundamentals of Reading and Writing	3
SPAN 250 Writing Techniques	3
MATH 121 Intermediate Algebra 3 MATH 151 Algebra and Trigonometry I 4	4
SOSC 111 Individual, Community, Government and Social Responsibility I 3	3
HUMA 111 Civilizations and Universal Culture I	3
<b>Core Courses</b>	<b>10</b>
FSEN 100 Introduction to Engineering Technology	3
ECTE 122 Introduction to Computer Programming	3
MATH 152 Algebra and Trigonometry II	4
<b>Concentration Courses</b>	<b>13</b>
QETE 240 Quality Management Principles and Improvement Tools QETE	3
245 Fund. of Statistical Process Control/Metrology	3
QETE 245L Lab. of Fundamentals of Statistical Process Control/Metrology	1
QETE 250 Introduction to Technical Engineering Management	3
QETE 255 Fundamentals of Lean Manufacturing-Six Sigma	3
<b>Electives Courses</b>	<b>4</b>
MATH 221 Calculus I	4
QETE 260 Principles of Industrial Regulations and Validations	4

**ASSOCIATE DEGREE IN COMPUTER TECHNOLOGY &  
NETWORKS**

The program focuses in areas of installation, estimating and maintenance of new and existing computerized systems and network infrastructure. Graduates will also have the necessary educational background to continue studies toward a Bachelor's Degree in Computer Engineering.

**Vision of the Computer Technology and Networks Program**

To become the first choice for all motivated students who wish to pursue an education in the field of Computer Technology and Networks in Puerto Rico.

**Mission of the Computer Technology and Networks Program**

To prepare computer technology and networks graduates professionally, so that they will be capable of fulfilling the technological needs of society and excel in the maintenance and improvement of computer systems.

**Objectives of the Computer Technology and Networks Program**

- To deliver instruction using current technology, the most modern equipment, test instruments and computers.
- To help fulfill the need for technicians in the fields of computer and network installation, maintenance and repair, particularly in the eastern and southeastern region of Puerto Rico.
- To ensure the intellectual development of students enrolled in the program.
- To develop technicians capable of undertaking leadership roles in professional, civic, and social environments.

**ASSOCIATE DEGREE IN COMPUTER TECHNOLOGY AND  
NETWORKS**

<b>Total Credits</b>	<b>58</b>
<b>General Education Courses</b>	<b>25</b>
<b>Core Courses</b>	<b>10</b>
<b>Concentration Courses</b>	<b>19</b>
<b>Electives Courses</b>	<b>4</b>
<b>General Education Courses</b>	<b>25</b>
ENGL 152 Fundamentals of Reading and Writing	3
ENGL 153 Advanced Communicative English	3
ENGL 231 Research and Writing	3
SPAN 152 Fundamentals of Reading and Writing	3
SPAN 250 Writing Techniques	3
MATH 121 Intermediate Algebra	3
MATH 151 Algebra and Trigonometry I	4
HUMA 111 Civilizations and Universal Culture I	3
<b>Core Courses</b>	<b>10</b>
FSEN 100 Introduction to Engineering Technology	3
3 ECTE 122 Introduction to Computer Programming	3
3 MATH 152 Algebra and Trigonometry II	4
<b>Concentration Courses</b>	<b>19</b>

CTEC 220	Fundamentals of Computers, Peripherals and Operating Systems	3
CTEC 220L	Lab. of Fund. of Computers, Peripherals and Operating Systems	1
EETE 223	Fundamentals of Computer Electronic	3
EETE 223L	Laboratory of Fundamentals of Computer Electronic	1
TCOM 335	Principles of Telecommunications and Networking	3
TCOM 335L	Laboratory of Principles of Telecommunications and Networking	1
TCOM 350	Fundamentals of Networking Infrastructure Management	3
TCOM 350L	Laboratory of Fundamentals of Networking Infrastructure Management	1
CTEC 230	Fundamentals of Intermediate Programming	3
MATH 221	Calculus I	4
EETE 255	Fundamentals of Microprocessors	4

### ASSOCIATE DEGREE IN ELECTRICAL TECHNOLOGY AND RENEWABLE ENERGY

The program focuses on the major areas of Electrical Technology and Renewable Energy. Graduates will also have the necessary educational background to continue studies towards an Associate Degree in Electrical Technology and Renewable Energy.

#### **Vision of the Electrical Technology and Renewable Energy Program**

To become the number one choice for all motivated students who wish to pursue electrical technology and renewable energy education in Puerto Rico.

#### **Mission of the Electrical Technology and Renewable Energy Program**

To prepare electrical technology and renewable energy graduates professionally, so that they will be capable of fulfilling the technological needs of society and excel in the installation, troubleshooting and maintenance of electrical systems.

### **Objectives of the Certificate in Electrical Technology and Renewable Energy Program**

- Help fulfill the need for technicians in the fields of Electrical Technology and Renewable Energy.
- Provide the knowledge and necessary skills required of the most recent electrical technology and renewable energy.
- Ensure the intellectual development of students enrolled in the program.
- Develop technicians capable of undertaking leadership roles in professional, civic, and social environments.

### ASSOCIATE DEGREE IN ELECTRICAL TECHNOLOGY AND RENEWABLE ENERGY

<b>Total Credits</b>	<b>57</b>
<b>General Education Courses</b>	<b>24</b>
<b>Core Courses</b>	<b>3</b>
<b>Concentration Courses</b>	<b>30</b>

#### **General Education Courses 24**

ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
MATH 121	Intermediate Algebra	3
SOSC 111	Individual, Community, Government and Social Responsibility I	3
HUMA 111	Civilizations and Universal Culture I	3

#### **Core Courses 3**

FSEN 100	Introduction to Engineering Technology	3
----------	--	---

#### **Concentration Courses 30**

ETRE 160	Principles of Electrical Circuits and Power	3
ETRE 160L	Lab. of Principles of Electrical Circuits and Power	1
ETRE 165	Fundamentals of Renewable energy	3
ETRE 170	Introduction to Electrical Installations and NEC	3
ETRE 170L	Lab. of Introduction to Electrical Installations and NEC	1
ETRE 175	Electrical machinery	3
ETRE 175L	Lab. of Electrical Machinery	1
ETRE 180	Fund. of Photovoltaic and Wind Power System	3
ETRE 180L	Lab. of Fund of Photovoltaic and Wind	3

	Power Syst.	1
ETRE 181L	Lab. of Photovoltaic and Wind Power Systems Installation	1
ETRE 260	Electrical Installations	3
ETRE 265	Principles of Electrical Controls and PLC	3
ETRE 265L	Lab. of Principles of Electrical Controls and PLC	1
ETRE 280	Review for License Examination of Electrician	3

### ACADEMIC ENGINEERING PROGRAMS

In a joint effort with its constituencies, each academic department has developed specific vision and mission statements, and educational objectives.

### ENGINEERING CURRICULUM

The School of Engineering offers academic programs leading to Bachelor of Science degrees in Mechanical Engineering, Electrical Engineering, Computer Engineering, Industrial and Management Engineering, and Civil Engineering. Within these programs, students may select electives that will provide a concentration in a major area of their chosen field.

The curriculum in each of the School of Engineering's academic programs has been developed to achieve the School's mission and the objectives of the individual programs. These curricula provide the student with the necessary skills in mathematics, science, engineering analysis and design, professional practice, and communication to successfully pursue a career in engineering.

The program curricula have many aspects in common. The first four semesters, known as the Engineering Basic Course Module, are relatively similar. This approach permits all students to make a well-informed choice of major at the end of their second year. Engineering design skills, crucial for the professional practice of engineering, are integrated throughout all program curricula, beginning in the first semester and culminating in capstone design experiences. Students will also gain considerable experience in engineering computer applications as they progress through the curricula. They will find that communication skills, both written and oral, are emphasized in all programs.

All program curricula also share a common general studies (humanities, social sciences, and languages) component.

The aim of these courses is to provide the student with a liberal arts preparation necessary to integrate their technical knowledge with their social and cultural environment. Particular emphasis is placed on communication skills. Given the international composition of the faculty, students should expect some courses to be taught entirely in English. Also, many engineering professors have an English language requirement for exams, written reports, and oral presentations.

Full-time students who follow the recommended course schedules can complete the engineering curriculum in 8 semesters (4 years). Program duration for part-time and transfer students will vary, based upon course load and previous course work.

Upon the completion of any of the engineering programs, students will be prepared to take the national Fundamentals of Engineering examination, one of the requirements for qualification for the Professional Engineer's license and for membership in the *Colegio de Ingenieros y Agrimensores de Puerto Rico*. The School of Engineering strongly encourages its students to take the Fundamentals of Engineering examination, and assists them in this endeavor.

The School of Engineering reserves the right to make changes in course offerings, curricula, and other policies affecting its programs. In the specific case of a curriculum revision, current students will be moved horizontally to the new curriculum. Students will be required to take new courses at a level higher than that at which the student is currently enrolled but never courses at a level below. All current and former students enrolled in the School of Engineering are subject to these conditions.

### ENGINEERING DESIGN

Each engineering program emphasizes the development of engineering design skills, crucial for engineering practice, especially in the local industrial environment. Beginning in their first semester, students will learn to devise individual components, systems, and processes while taking into account some "real-world" constraints, specifications, and requirements. Students will demonstrate their design abilities through a series of projects and open-ended problems of increasing sophistication and complexity, culminating in capstone design projects in their final semester. They will receive ample experience in communicating their designs graphically, in writing and

through oral presentations, to other students, faculty, and practicing engineers.

The School of Engineering maintains modern computeraided design software applications on its network of computers, rapid prototyping equipment, and a machine shop in support of these design activities.

## RESEARCH

To enhance the students' educational experience and to ensure the continued professional development of the faculty, the School of Engineering encourages and supports faculty research activities in a variety of fields.

Opportunities exist for students to participate in Undergraduate Research elective courses on a number of ongoing projects. In addition to gaining valuable experience and developing crucial lifelong learning skills, students receive course credit for their efforts. Some of these research programs are funded by a number of federal, commonwealth, and private industrial sources.

Students and faculty may also participate in summer internship programs. Students gain valuable experience in a research and development environment and begin to develop the professional contacts that will assist them in their career development.

In addition, Universidad Ana G. Méndez-Recinto de Gurabo is a member of the Latin American and Caribbean Consortium of Engineering Institutions (LACCEI), which fosters partnerships among academia, industry, government and private organizations.

## GRADUATING STUDENT PROFILE

Students that complete any of the engineering programs at Universidad Ana G. Méndez-Recinto de Gurabo develop, as a minimum, the following profile:

- An ability to apply knowledge of mathematics, science and engineering.
- An ability to design and conduct experiments, as well as to analyze and interpret data.
- An ability to design a system, component, or process to meet desired needs.
- An ability to function on multidisciplinary teams.
- An ability to identify, formulate, and solve engineering problems.
- An understanding of professional and ethical responsibility.

- An ability to communicate effectively.
- The broad education necessary to understand the impact of engineering solutions in a global and societal context.
- Recognition of the need for, and the ability to engage in life-long learning.
- Knowledge of contemporary issues.
- Ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

## APPLICATION PROCESS

The School of Engineering uses the same application procedure as Universidad Ana G. Méndez-Recinto de Gurabo.

## ADMISSIONS POLICY

### Freshman

While the actual procedure for admitting students to the Academic Engineering Programs depends on whether the applicant is a first-time freshman, a transfer student from another institution, or a UT student reclassified from another program, the fundamental criterion is the same: the applicant must demonstrate a sufficiently strong background in mathematics and English so as to have a reasonable chance of successfully completing an academic engineering program leading to a B.S. degree. The intention of this criterion is to be inclusive. The goal of the SOE admissions policy is to ultimately admit every student with a motivation to study engineering, if not immediately, then after successful completion of a set of basic mathematics and English courses. This criterion derives directly from the stated UT goals and mandates of the SOE to provide opportunities for professional engineering education to all interested students in Puerto Rico.

Applicants to academic engineering programs leading to B.S. degrees in Civil Engineering, Computer Engineering, Electrical Engineering, Industrial and Management Engineering, or Mechanical Engineering have to satisfy the following admission requirements:

A High School Grade Point Average (GPA) of not lower than 2.0/4.0.

Take the College Entrance Examination Board (CEEB) and, using the following formula with the Achievement scores of the CEEB, obtain an index of at least 75 and PEAU (Math)  $\geq$  550:

Engineering students are placed in the appropriate mathematics, English, and Spanish courses according to their CEEB scores. Cut-off scores have been identified in each area; for example, students with a CEEB score of 700 or higher in mathematics may enroll directly in MATH 151 Pre-Calculus I. Similar cut-off scores exist for English and Spanish courses with several levels that determine the degree of development required by a student. However, students may opt to challenge the cut-off score in math, English and Spanish courses by taking placement exams offered by Universidad Ana G. Méndez-Recinto de Gurabo. If the challenge is successful, the student will be enrolled in the appropriate higher-level course. Scores from Advanced Placement CEEB exam results are respected by Universidad Ana G. Méndez-Recinto de Gurabo although in some cases the required cut-off score is 3.0 (of a maximum of 5.0).

Students not satisfying the requirements stated above are encouraged to enroll in the Associate Degree Programs. Once they have achieved the necessary verbal, mathematics, or English language skills as required by the Academic Engineering Programs, the student may submit a request to the Engineering Advising Office for reclassification into the Engineering Academic Programs.

### Reclassification of Students from the UTSOE Associate Degree Programs

Students currently enrolled in an associate degree program of the SOE Institute of Technology may seek reclassification into an engineering bachelor's degree program in one of the following two manners:

1. Complete the associate degree program and request graduation. In this case, the student will be able to transfer credits depending on the originating associate degree program and the baccalaureate program to which the student is seeking to reclassify.
2. Or, pass MATH 121 Intermediate Algebra *or* MATH 151 Pre-Calculus I with a grade of A or B *on first attempt*, and have a minimum cumulative GPA of 2.5/4.0 at the conclusion of that semester.

### Reclassification of Students from Other UT Academic Programs

Students currently enrolled in other academic programs at UT, and seeking reclassification into one of the bachelor's degree engineering programs must meet the following requirements:

1. Have a cumulative GPA of not less than 2.5/4.0 at Universidad Ana G. Méndez-Recinto de Gurabo.

$$Index = \frac{[(Mathematics + English + Spanish) \times 0.75] + [GPA \times (25)]}{16}$$

*Admit to B.S. program if Index  $\geq$  75*

For example, suppose a student has the following qualifications:

- GPA: 3.0
- CEEB Achievement Test Scores:
  - Mathematics: 600
  - English: 550
  - Spanish: 450

$$Index = \frac{[(600+550+450) \times 0.75] + [3.0 \times (25)]}{16}$$

$$Index = \frac{[1200] + [75]}{16}$$

$$Index = 79.7, \therefore \text{Admit to B.S. program since Index } \geq 75$$

Example:  
How to calculate  
the Index

2. Pass MATH 151 Pre-Calculus I with a minimum grade of B.
3. Or, in the case of students reclassifying from the School of Business and Entrepreneurship, pass MATH 199 Quantitative Methods I *and* MATH 200 Quantitative Methods II with a minimum grade of B in each course. These two courses substitute MATH 152 Pre-Calculus II.

### Transfer Students

The Director of the EAO, in coordination with the Associate Dean of the SOE, oversees the admission process of transfer students into the engineering degree programs. Only these two persons are authorized to evaluate candidates; this is done to guarantee consistency in the evaluation of course equivalencies for transfer credits. No other faculty member of the department, school, or university can officially grant transfer credits under any circumstances; however, faculty members may be consulted to recommend course equivalencies. The Associate Dean's approval is required in all evaluations. The standard practice is to validate credit for a course taken elsewhere if course content is equivalent to at least 75% of the course in UT's engineering curricula. Only courses with a grade of C or better are considered for credit transfer.

**General Admission Requirements for Transfer Students** For transfer students from ABET accredited engineering programs:

1. Have a minimum GPA of 2.0/4.0.
2. Be eligible to start in at least MATH 151 PreCalculus I, i.e., pass a course leading to MATH 151 with a minimum grade of B, or be able to place in MATH 151 by placement exam.

For transfer students from non-ABET accredited engineering programs:

1. Have a minimum GPA of 2.5/4.0.
2. Be eligible to start in at least MATH 151 PreCalculus I, i.e., pass a course leading to MATH 151 with a minimum grade of B, or be able to place in MATH 151 by placement exam.

General guidelines for transfer of courses are as follows:

### General Education, Math, and Science Courses

Most transfer students enter at the freshman or sophomore level. In such cases, the EAO is primarily concerned with the evaluation of general education, math, and science courses. Equivalencies for courses under this category will be granted as long as the School/ College/University is recognized and accredited by the appropriate governing bodies and the course descriptions, including prerequisites, agree with

those of the Universidad Ana G. Méndez-Recinto de Gurabo undergraduate catalog. The student must submit a catalog (or photocopies) with the course descriptions to the EAO. Life experience credits are not accepted under any circumstances.

### Engineering Science Courses

The EAO is also especially concerned with the first few engineering science courses that are common to all UT's engineering curricula. These include FSEN 105 (Introduction to Engineering), ENGI 122 (Introduction to Computer Programming), and ELEN 301 (Electrical Networks I). Courses from ABET accredited programs are easily transferable. Nevertheless, course descriptions are necessary to assure equivalency. Courses from non-ABET accredited programs (including foreign institutions) are accepted as long as the School/College/University is recognized and accredited by the appropriate governing bodies and the course descriptions, including prerequisites, agree with those of the Universidad Ana G. Méndez-Recinto de Gurabo undergraduate catalog. The student must submit a catalog (or photocopies) with the course descriptions to the EAO. Life experience credits are not accepted under any circumstances.

Engineering science courses of a level higher than those listed above follow the same procedure; however, it may become necessary for the EAO to consult with a cognizant faculty member to determine equivalency. The student may also be required to submit a copy of the syllabus and the textbook if the course description is insufficient to determine equivalency.

### Engineering Elective Courses

Engineering electives are not transferable.

### Engineering Design Courses

An engineering design course is defined for the purpose of this section as a high-level design course typical of the last two or three semesters that culminate the curriculum. These courses are not transferable.

Students must also follow the residence requirements which stipulate that transfer students must earn at least the last thirty (30) credit hours of a bachelor's degree and the last twelve (12) credit hours of their major from the School of Engineering.

### General procedure

The student supplies a copy of their transcript and course descriptions to the EAO for an initial advising session. The EAO will direct the student to the Associate Dean who checks the student's records to ensure that the student is in the

proper major and eligible for the program. Students on academic probation at other institutions will not be considered. During the session, the Associate Dean fills and discusses an advising sheet with the student. The Associate Dean explains which courses may be transferred, which courses could not be accepted and why, and identifies which courses are needed to fulfill the degree requirements. An extra copy of the advising sheet is given to the student. To complete the transfer process, the student must also request official transcripts from the institution and fill in the application for admission form. This advising session is a service provided free of cost to the student. A candidate may opt to skip this advising session and apply to the program by completing the application for admission and submitting it by mail. After evaluation and approval by the Associate Dean of Engineering, the transfer process culminates with the approval of the Admissions Director.

### **Graduation Requirements**

Completion of the courses required for the degree as set by UT, with a minimum cumulative GPA of 2.00/4.00 and a minimum GPA in the major of 2.30/4.00.

See the established university policy.

### **Prerequisites**

The School of Engineering enforces the prerequisites in its engineering curriculum. The software used for registration automatically checks prerequisites and will not allow a student to register a course for which the prerequisites are not met.

### **Academic Advising**

All engineering students are referred to the Engineering Advising Office to ensure proper course sequencing with respect to prerequisites. An Engineering Advising Sheet is used for this purpose. As a supplemental activity, all engineering students are encouraged to visit faculty members during office hours (or ask for an appointment) to discuss progress, academic goals, career goals, and professional aspects of the engineering profession.

## **PROFESSIONAL SOCIETIES**

Engineering students are strongly encouraged to become student-members of professional societies and to continue membership after graduation to facilitate the process of life-long learning.

## **ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT**

**Dr. José L. Colón, Department Head**

The Electrical and Computer Engineering department offers two programs at the bachelor's degree level, one in electrical engineering and the other in computer engineering. Each program is described separately. The two programs share the same faculty and same technical staff, as follows:

### **ELECTRICAL AND COMPUTER ENGINEERING FACULTY**

**Alcides Alvear** / Associate Professor  
M.S., Universidad de Puerto Rico

**Idalides J. Vergara-Laurens** / Associate Professor  
Ph.D., University of South Florida

**Jeffrey L. Duffany** / Professor  
Ph.D., Stevens Institute of Technology

**José Almodóvar** / Associate Professor  
Ph.D., University of Florida

**José L. Colón** / Professor  
Electrical and Computer Eng. Department Head  
D. Eng., Rensselaer Polytechnic Institute

**Mark A. Lau** / Professor  
Ph.D., University of Colorado at Boulder

**Miguel Goenaga** / Associate Professor  
Ph.D., Universidad de Puerto Rico

**Rafael Rivera** / Assistant Professor  
Ph.D., San Pablo, CEU, Madrid, Spain

**Roberto Callarotti** / Professor  
Ph.D., Massachusetts Institute of Technology

**Wilma Pabón** / Assistant Professor  
M.S., Universidad de Puerto Rico

**Yahya M. Masalmah** / Professor  
Ph.D., Universidad de Puerto Rico

### **ELECTRICAL AND COMPUTER ENGINEERING TECHNICAL STAFF**

**Jorge Gaudier** / Electrical Engineering Lab. Coordinator  
M.S., University of Missouri at Columbia

**Noemí Camacho** / Computer Center Coordinator  
B.B.A., Universidad del Turabo

## COMPUTER ENGINEERING PROGRAM



Engineering  
Accreditation  
Commission

The Computer Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

In an increasingly complex world computers are at the forefront of the most amazing technological developments. With in view of this such a vast spectrum of applications ranging from the Internet to electronic portable devices to robotics to video games, the Computer Engineering Program provides the student with a rigorous academic preparation for a rich and rewarding career. Students will learn the principles of hardware and software design and their interface to build complex computer systems for industrial applications.

### VISION

To become the first choice for all motivated students who wish to pursue a computer engineering education in Puerto Rico.

### MISSION

To professionally prepare computer engineering students who, as graduates, are capable of fulfilling the technological needs of society.

### EDUCATIONAL OBJECTIVES OF THE COMPUTER ENGINEERING PROGRAM

(broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve)

1. To apply the principles of the profession or gain entrance to a graduate program in computer engineering or related disciplines.
2. To become leaders in their profession by assuming increasing responsibility within their organizations, serving as role models for their peers, and being effective change agents for the benefit of the organizations that they represent.

3. To demonstrate attainment of professional and technical maturity.

The Faculty of the Electrical and Computer Engineering Department, through a set of measurable outcomes, and with the participation of students and an Industrial Advisory Board, systematically measures the effectiveness of the program in satisfying its educational objectives and continuously strives to improve the program.

### OUTCOMES FOR COMPUTER ENGINEERING PROGRAM

(What students should know and should be able to do by the time of graduation)

- a. An ability to apply knowledge of mathematics, science, and engineering.
- b. An ability to design and conduct experiments as well as to analyze and interpret data.
- c. An ability to design a system, component, or process to meet desired needs.
- d. An ability to function in multidisciplinary teams.
- e. An ability to identify, formulate, and solve engineering problems.
- f. An understanding of professional and ethical responsibility.
- g. An ability to communicate effectively.
- h. The broad education necessary to understand the impact of engineering solutions in a global and societal context.
- i. A recognition of the need for, and an ability to engage in, lifelong learning.
- j. A knowledge of contemporary issues.
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- l. Knowledge of probability and statistics, including appropriate computer engineering applications.
- m. Knowledge of advanced mathematics, including differential equations, linear algebra, complex variables, and discrete mathematics.
- n. An ability to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components.

### BACHELOR'S DEGREE IN SCIENCE WITH CONCENTRATION IN COMPUTER ENGINEERING

<b>Total Credits</b>	<b>128</b>
<b>General Education Courses</b>	<b>53</b>
<b>Core Courses</b>	<b>12</b>
<b>Concentration Courses</b>	<b>54</b>
<b>Elective Courses</b>	<b>9</b>

**General Education Courses 53**

SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
MATH 152	Pre-Calculus II	4
PHSC 215	Physics for Engineering I (includes Lab)	4
CHEM 203	General Chemistry I	4
HUMA 111	Civilizations and Universal Culture I	3
111	Individual, Community, and Social Responsibility I	3
SOSC 112	Individual, Community, and Social Responsibility II	3
FSEN 105	Introduction to Engineering	3
MATH 221	Calculus I	4
MATH 222	Calculus II	4
MATH 395	Differential Equations	3
Free elective		3

**Core Courses 12**

COMP 311	Discrete Mathematics for Engineers	3
ENGI 122	Introduction to Computer Programming	3
ENGI 223	Intermediate Programming	3 ENGI
398	Engineering Mathematics	3

**Concentration Courses 54**

COMP 315	Analysis and Design of Data Structures and Algorithms	3
COMP 315	Analysis and Design of Data Structures and Algorithms Lab	1
COMP 411	Numerical Methods with Programming	3
CPEN 358	Object-Oriented Programming	3
CPEN 358	Object-Oriented Programming Lab	1
CPEN 410	Mobile Web and Internet Programming	3
CPEN 425	Software Engineering	3
CPEN 444	Computer Architecture and Organization	3
CPEN 452	Operating Systems	3
CPEN 455	Introduction to Databases	3
CPEN 481	Telecommunication Networks and Security	3
CPEN 491	Senior Design Project I	3
CPEN 492	Senior Design Project II	3
ELEN 301	Electrical Networks I	3
ELEN 302	Electrical Networks I Laboratory	1
ELEN 312	Digital Logic Design I	3
ELEN 313	Digital Logic Design I Laboratory	1
ELEN 330	Electronics I	3
ELEN 332	Electronics I Laboratory	1
ELEN 360	Random Signals and Systems	3

ELEN 442	Microprocessors I	3
ELEN 447	Microprocessors Laboratory	1

**Elective Courses 9**

CPEN 456	Database Management Systems	3
CPEN 457	Programming Languages	3
CPEN 458	Introduction to Compilers	3
CPEN 459	Artificial Intelligence	3
CPEN 478	Distributed Systems	3
CPEN 488	Advanced Computer Architectures	3
CPEN 497	Special Topics	3
ENGY 103	Electrical Energy: Basic Concepts	1
ENGY 203	Fundamentals of Electrical Energy Systems	1
ENGY 303	Energy and Electrical Power Systems	1
CPEN 502	Advanced Analysis & Design of Algorithms	3

CPEN 503	Computer and Network Security	3
CPEN 504	Advanced Computer Architectures	3
CPEN 505	Database Management Systems	3
CPEN 511	Distributed Systems	3
CPEN 520	Numerical Optimization	3
CPEN 550	Operating Systems Programming	3
CPEN 552	Computer Graphics	3
CPEN 640	Embedded Systems	3
ELEN 502	Advanced Linear Systems	3
ELEN 503	Solid State Electronics	3
ELEN 505	Probability and Random Processes	3
ELEN 510	Advanced Power System Analysis	3
ELEN 511	Power System Dynamics and Control	3
ELEN 520	Digital Control Systems	3
ELEN 550	Digital Filters	3

**Non-Departmental and Non-Engineering Electives**

ENGI 210	Engineering Economy	3
ENTR 360	Entrepreneurship	3
ENTR 401	Identification and Evaluation of Entrepreneurial Opportunities	3

IMEN 341	Accounting and Finance for Engineers	3
IMEN 406	Operations Research	3
TCOM 503	Introduction to TCP/IP	3
TCOM 513	IT Project Management	3
TCOM 521	Introduction to Networking	3

**Cybersecurity Option (Select a minimum of 9 credits from this list if pursuing this option)**

CYBR 501	Network Security I	3
CYBR 502	Computer Security I	3
CYBR 521	Network Security II	3
CYBR 522	Computer Security II	3
CYBR 600	Cyber Forensics	3

**Quality Assurance and Experimental Design Option**

IMEN 205	Principles of Engineering Management	3
IMEN 395	Inferential Statistics for Engineers	3
IMEN 402	Work Measurement	3
IMEN 405	Statistical Quality Control	
IMEN 416	Design of Industrial Experiments	3
<b>Engineering Management Option</b>		
IMEN 510	Engineering Management	3
IMEN 551*	Advanced Engineering Project Management	3
IMEN 610	Statistics for Decision Modeling	3
IMEN 620	Advanced Enterprise Continuous Improvement	3
IMEN 630	Supply Chain Management for Engineers	3
IMEN 635	Logistics Methods and Strategies	3
IMEN 640	Design and Operation of Logistics Networks	3
IMEN 645	Analytics for Decision Making	3
* TCOM 513	Information Technology Project Management	
may be used as a substitute for IMEN 551		
<b>Entrepreneurship and Innovation Minor</b>		
INNO 300	Sustainable Innovation (or ENTR 360)	3
INNO 303	Product Development, Prototyping, and Idea Validation (or ENTR 401)	3
INNO 400	Startup Internship	3
MANA 204	Mercantile Law and Corporate Ethics (or IMEN 341)	3

**Important notes:**

1. Some of the required or elective specialty courses are not offered every semester.
2. Universidad Ana G. Méndez-Recinto de Gurabo reserves the right to make changes to this curriculum.

**Development courses**

MATH 120	Elementary Algebra	3	Placement Exam
MATH 120-E	Introductory Algebra Intensive	3	Placement Exam
MATH 121	Intermediate Algebra	3	Placement Exam
MATH 151	Pre-Calculus I	4	Placement Exam
ENGL 152-E	Fundamentals of Reading and Writing Enhanced	3	Placement Exam
SPAN 152-I	Fundamentals of Reading and Writing Intensive	3	Placement Exam

**ELECTRICAL ENGINEERING PROGRAM**



The Electrical Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

The conveniences that we enjoy today are made possible by the effective utilization of electrical energy. This form of energy has enabled a wide spectrum of technologies ranging from computers to robotics to industrial automation to medical imaging to wireless communication. The standard of living of any country is judged by the consumption of electrical energy per capita. The Electrical Engineering Program offers the student an exciting curriculum covering diverse areas including power, electronics, computers, controls, communications, and signal processing. Students will be well prepared to tackle problems in these areas and become agents of innovation in an increasingly complex world. In circuits and electronics, students are introduced to energy sources, circuit elements, and devices that are encountered in practical electrical networks. In power systems, students are given the background to understand the generation, transmission, and distribution of electric power. In computers, students learn the principles under which computers are built and communicate among themselves; students also learn how to design software for applications such as the Internet. In control systems, students are introduced to the design techniques for the automatic monitoring of industrial processes. In communications and signal processing, students learn the modulation techniques used in analog and digital communication systems, and filter design for processing images and acoustic signals.

**VISION**

To become the first choice for all motivated students who wish to pursue an electrical engineering education in Puerto Rico.

**MISSION**

To professionally prepare electrical engineering students who, as graduates, are capable of fulfilling the technological needs of society.

## EDUCATIONAL OBJECTIVES

(broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve)

1. To apply the principles of the profession or gain entrance to a graduate program in electrical engineering or related disciplines.
2. To become leaders in their profession by assuming increasing responsibility within their organizations, serving as role models for their peers, and being effective change agents for the benefit of the organizations that they represent.
3. To demonstrate attainment of professional and technical maturity.

The Faculty of the Electrical and Computer Engineering Department, through the following set of measurable outcomes, and with the participation of its constituents, systematically measures the effectiveness of the program in satisfying its educational objectives and continuously strives to improve the program

## OUTCOMES

(What students should know and should be able to do by the time of graduation)

- a. An ability to apply knowledge of mathematics, science, and engineering.
- b. An ability to design and conduct experiments as well as to analyze and interpret data.
- c. An ability to design a system, component, or process to meet desired needs.
- d. An ability to function on multidisciplinary teams.
- e. An ability to identify, formulate, and solve engineering problems.
- f. An understanding of professional and ethical responsibility.
- g. An ability to communicate effectively.
- h. The broad education necessary to understand the impact of engineering solutions in a global and societal context.

- i. A recognition of the need for, and an ability to engage in, lifelong learning.
- j. A knowledge of contemporary issues.
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- l. Knowledge of probability and statistics, including appropriate electrical engineering applications.
- m. Knowledge of advanced mathematics, including differential equations, linear algebra, complex variables, and discrete mathematics.
- n. An ability to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components.

**BACHELOR'S DEGREE IN SCIENCE WITH CONCENTRATION  
IN ELECTRICAL ENGINEERING**

<b>Total Credits</b>	<b>128</b>
<b>General Education Courses</b>	<b>61</b>
<b>Core Courses</b>	<b>13</b>
<b>Concentration Courses</b>	<b>45</b>
<b>Elective Courses</b>	<b>9</b>

<b>General Education Courses</b>		<b>61</b>
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
MATH 152	Pre-Calculus II	4
PHSC 215	Physics for Engineering I (includes Lab)	4
CHEM 203	General Chemistry I	4
HUMA 111	Civilizations and Universal Culture I	3
111	Individual, Community, and Social Responsibility I	3
SOSC 112	Individual, Community, and Social Responsibility II	3
FSEN 105	Introduction to Engineering	3
MATH 221	Calculus I	4
MATH 222	Calculus II	4
MATH 223	Calculus III	4
MATH 395	Differential Equations	3
PHSC 216	Physics for Engineering II (includes lab)	4
Free elective		3
<b>Core Courses</b>		<b>13</b>
ENGI 122	Introduction to Computer Programming	3
ENGI 223	Intermediate Programming	3
ELEN 301	Electrical Networks I	3

ELEN 302	Electrical Networks I Laboratory	1
ENGI 398	Engineering Mathematics	3

**Concentration Courses** **45**

ELEN 311	Electrical Networks II	3
ELEN 312	Digital Logic Design I	3
ELEN 313	Digital Logic Design I Laboratory	1
ELEN 330	Electronics I	3
ELEN 332	Electronics I Laboratory	1
ELEN 360	Random Signals and Systems	3
ELEN 370	Electromagnetics	3
ELEN 415	Signals, Systems, and Control	3
ELEN 417	Systems Laboratory	1
ELEN 421	Electromechanical Energy Conversion Laboratory	1
ELEN 422	Electrical Machines	3
ELEN 431	Electronics II	3
ELEN 433	Electronics II Laboratory	1
ELEN 442	Microprocessors I	3
ELEN 447	Microprocessors Laboratory	1
ELEN 474	Communication Systems I	3
ELEN 480	Power System Analysis I	3
ELEN 491	Electrical Engineering Design Concepts	3
ELEN 492	Major Design Experience	3

**Elective Courses** **9**

ECEN 400	Survey of Electrical and Computer Engineering Topics	3
ELEN 430	Digital Electronics	3
ELEN 434	Instrumentation	3
ELEN 436	Power Electronics	3
ELEN 441	Digital Logic Design II	3
ELEN 443	Microprocessors II	3
ELEN 460	Digital Signal Processing	3
ELEN 472	Antennas and Transmission Lines	3
ELEN 475	Communication Systems II	3
ELEN 478	RF Design	3
ELEN 481	Power System Analysis II	3
ELEN 484	Power Transmission and Distribution	3
ELEN 488	Power System Reliability	3
ELEN 497	Special Topics	3
ELEN 498	Undergraduate Research I	3
ELEN 499	Undergraduate Research II	3
ENGY 103	Electrical Energy: Basic Concepts	1
ENGY 203	Fundamentals of Electrical Energy Systems	1

ENGY 303	Energy and Electrical Power Systems	1	ELEN 520	Digital Control Systems	3
ELEN 502	Advanced Linear Systems	3	ELEN 550	Digital Filters	3
ELEN 503	Solid State Electronics	3	CPEN 502	Advanced Analysis & Design of	
ELEN 505	Probability and Random Processes	3		Algorithms	3
ELEN 510	Advanced Power System Analysis	3	CPEN 503	Computer and Network Security	3
ELEN 511	Power System Dynamics and Control	3	CPEN 504	Advanced Computer Architectures	3

CPEN 505	Database Management Systems	3
CPEN 511	Distributed Systems	3
CPEN 520	Numerical Optimization	3
CPEN 550	Operating Systems Programming	3
CPEN 552	Computer Graphics	3
CPEN 640	Embedded Systems	3

**Non-Departmental and Non-Engineering Electives**

ENGI 210	Engineering Economy	3
ENTR 360	Entrepreneurship	3
ENTR 401	Identification and Evaluation of Entrepreneurial Opportunities	3

IMEN 341	Accounting and Finance for Engineers	3
IMEN 406	Operations Research	3
TCOM 503	Introduction to TCP/IP	3
TCOM 513	IT Project Management	3
TCOM 521	Introduction to Networking	3

**Cybersecurity Option (Select a minimum of 9 credits from this list if pursuing this option)**

CYBR 501	Network Security I	3
CYBR 502	Computer Security I	3
CYBR 521	Network Security II	3
CYBR 522	Computer Security II	3
CYBR 600	Cyber Forensics	3

**Quality Assurance and Experimental Design Option**

IMEN 205	Principles of Engineering Management	3
IMEN 395	Inferential Statistics for Engineers	3
IMEN 402	Work Measurement	3
IMEN 405	Statistical Quality Control	

IMEN 416	Design of Industrial Experiments	3
----------	----------------------------------	---

**Engineering Management Option**

IMEN 510	Engineering Management	3
IMEN 551*	Advanced Engineering Project Management	3
IMEN 610	Statistics for Decision Modeling	3
IMEN 620	Advanced Enterprise Continuous Improvement	3
IMEN 630	Supply Chain Management for Engineers	3
IMEN 635	Logistics Methods and Strategies	3

IMEN 640	Design and Operation of Logistics Networks	3
IMEN 645	Analytics for Decision Making	3
* TCOM 513	Information Technology Project Management	3
INNO 300	Sustainable Innovation (or ENTR 360)	3
INNO 303	Product Development, Prototyping, and Idea Validation (or ENTR 401)	3
INNO 400	Startup Internship	3
MANA 204	Mercantile Law and Corporate Ethics (or IMEN 341)	3

**Important notes:**

1. Some of the required or elective specialty courses are not offered every semester.
2. Universidad Ana G. Méndez-Recinto de Gurabo reserves the right to make changes to this curriculum.

**Development courses**

MATH 120	Elementary Algebra	3	Placement Exam
MATH 120-E	Introductory Algebra Intensive	3	Placement Exam
MATH 121	Intermediate Algebra	3	Placement Exam
MATH 151	Pre-Calculus I	4	Placement Exam
ENGL 152-E	Fundamentals of Reading and Writing Enhanced	3	Placement Exam
SPAN 152-I	Fundamentals of Reading and Writing Intensive	3	Placement Exam

## INDUSTRIAL AND MANAGEMENT ENGINEERING PROGRAM

Dr. Oscar A. Sáenz, Department Head



Engineering  
Accreditation  
Commission

The Industrial and Management Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

Industrial and Management Engineering encompasses activities in quality, production, operations research, simulation, facilities layout, work system design, work measurement, project management, safety and ergonomics, economic and cost analysis. An industrial and management engineering graduate acquires the capacity to design, develop, implement, and improve integrated systems that include people, materials, information, equipment, technology and energy. This engineer applies knowledge from mathematics, science, computers, accounting, algorithms and graphics to solve problems involving efficiency, effectiveness or productivity. In terms of Management, a graduate of this program develops an understanding of the engineering relationships between the management tasks of planning, organizing, leading, controlling, and the human element in production and service organizations. Essential professional skills, such as communication, teamwork and interpersonal relations are practiced throughout this program.

### VISION

To become the first choice for all motivated students who wish to pursue an Industrial and Management Engineering education.

### MISSION

To professionally prepare Industrial and Management Engineering students who, as graduates, are capable of fulfilling the technological needs of society.

### EDUCATIONAL OBJECTIVES

(broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve)

The IME program is committed to provide our graduates with the

technical and professional skills necessary to solve contemporary challenges in industrial and management engineering. The first goal of the IME program is that, within the first years after graduation, our graduates will successfully engage technical problems in areas such as Quality, Design of Experiments, Simulation, Work Systems Design, Facilities and Production Planning, as well as working in teams, manage or participate in projects, and contribute to decision-making towards enterprise improvement and greater efficiency. The second goal of the IME program is that, progressively over time, our graduates will be able to assume greater technical and administrative responsibilities, manage projects, and assume more complex leadership roles in their enterprises.

Building upon the above-mentioned two general goals, the IME Program has three educational objectives, which the IME Department assesses periodically to measure the degree to which alumni achieve them.

Within four years following graduation:

**Objective 1:** graduates will gain technical and professional experience in IME, or allied disciplines, via successful employment, self-employment, or pursue graduate studies.

**Objective 2:** graduates will perform IME related functions, improve, design, redesign, or manage enterprises (i.e., products, activities, business processes in industrial or service settings) with a systems perspective.

Five years after graduation and beyond, and by further developing their engineering and management skills, IME graduates

**Objective 3:** graduates will advance in their professional careers and progressively assume greater leadership, technical, or managerial roles in their organizations.

The Faculty of the Industrial and Management Engineering Department, through the following set of measurable outcomes, and with the input of its constituents, systematically measures the effectiveness of the program and continuously strives to improve the program.

### OUTCOMES

(What students should know and should be able to do by the time of graduation)

Engineering programs must demonstrate that their graduates have:

- An ability to apply knowledge of mathematics, science and engineering.

- b. An ability to design and conduct experiments, as well as to analyze and interpret data.
- c. An ability to design a system, component, or process to meet desired needs.
- d. An ability to function on multi-disciplinary teams.
- e. An ability to identify, formulate, and solve engineering problems.
- f. An understanding of professional and ethical responsibility.
- g. An ability to communicate effectively.
- h. The broad education necessary to understand the impact of engineering solutions in a global and societal context.
- i. A recognition of the need for, and an ability to engage in life-long learning.
- j. A knowledge of contemporary issues.
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- l. The ability to design, develop, implement, and improve integrated systems that include people, materials, information, equipment and energy.
- m. Accomplish integration of systems using appropriate analytical, computational, and experimental practices.
- n. An understanding of the engineering relationships between the management tasks of planning, organization, leadership, control, and the human element in production, research, and service organizations.
- o. An understanding of and dealing with the stochastic nature of management systems.
- p. The capability of demonstrating the integration of management systems into a series of different technological environments.

#### INDUSTRIAL AND MANAGEMENT ENGINEERING FACULTY

**Jannette Pérez, P.E.** / Assistant Professor  
M.S., Universidad de Puerto Rico

**José Santiváñez** / Professor  
Ph.D., Northeastern University

**Oscar A. Sáenz** / Professor and Department Head Ph.D.,  
Florida International University.

#### INDUSTRIAL AND MANAGEMENT ENGINEERING TECHNICAL STAFF

**Ariel D. Machín, P.E.** / IME Lab. Director and Instructor  
M.E., Polytechnic University of Puerto Rico

#### BACHELOR'S DEGREE IN SCIENCE WITH CONCENTRATION IN INDUSTRIAL & MANAGEMENT ENGINEERING

<b>Total Credits</b>	<b>129</b>
<b>General Education Courses</b>	<b>60</b>
<b>Core Courses</b>	<b>12</b>
<b>Concentration Courses</b>	<b>51</b>
<b>Elective Courses</b>	<b>6</b>
<b>General Education Courses 60</b>	
SPAN 152 Fundamentals of Reading and Writing	3
SPAN 250 Writing Techniques	3
ENGL 152 Fundamentals of Reading and Writing	3
ENGL 153 Advanced Communicative English	3
ENGL 231 Research and Writing	3
MATH 152 Pre-Calculus II	4
MATH 152L Pre-Calculus II Lab	0
CHEM 203 General Chemistry I	4
CHEM 203L General Chemistry I Lab	0
HUMA 111 Civilizations and Universal Culture I	3
111 Individual, Community, and Social Responsibility I	3
SOSC 112 Individual, Community, and Social Responsibility II	3
FSEN 105 Introduction to Engineering	3
MATH 221 Calculus I	4
MATH 221L Calculus I Lab	0
MATH 222 Calculus II	4
MATH 222L Calculus II Lab	0
MATH 350 Linear Algebra	3
MATH 395 Differential Equations	3
PHSC 215 General Physics for Engineering I	4
PHSC 215L General Physics for Engineering I Lab	0
PHSC 216 General Physics for Engineering II	4
PHSC 216L General Physics for Engineering II Lab	0
Free elective	3
<b>Core Courses 12</b>	
ENGI 122 Introduction to Computer Programming	3
ENGI 277 General Statics and Dynamics	3
ENGI 210 Engineering Economy	3
ELEN 301 Electrical Networks I	3
<b>Concentration Courses 45</b>	
IMEN 205 Principles of Engineering Management	3
IMEN 390 Probability for Engineers	3
IMEN 341 Accounting and Finance for Engineers	3
IMEN 395 Inferential Statistics for Engineers	3
IMEN 402 Work Measurement	3
IMEN 403 Work Systems Design	3
IMEN 405 Statistical Quality Control	3
IMEN 406 Operations Research	3

IMEN 407	Production Planning and Control	3
IMEN 408	Facilities Planning	3
IMEN 409	Design Project	3
IMEN 411	Systems Analysis and Design	3
IMEN 413	Probabilistic Models in Operations	
	Research	3
IMEN 414	Systems Simulation	3
IMEN 421	Engineering Project Management	3
IMEN 425	Enterprise Continuous Improvement	3
ACCO 303	Cost Accounting	3
Industrial and Management Engineering Elective		6

**Elective Courses 6**

IMEN 404	Industrial Safety & Health Management	3
IMEN 416	Design of Industrial Experiments	3
IMEN 495	Special Topics	3
IMEN 497	Special Topics	3
IMEN 498	Undergraduate Research I	3
IMEN 499	Undergraduate Research II	3
MATH 223	Calculus III	3
IMEN 510	Engineering Management	3
IMEN 551 or	Advanced Engineering Project Management or	
TCOM 513	Information Technology Project	
	Management	3
IMEN 610	Statistics for Decision Modeling	3
IMEN 620	Advanced Enterprise Continuous	
	Improvement	3
IMEN 630	Supply Chain Management for Engineers	3
IMEN 635	Logistics Methods and Strategies	3
IMEN 640	Design and Operation of Logistic	
	Networks	3
INNO 300	Sustainable Innovation **	3
INNO 303	Product Development, Prototyping & Idea	
	Validation**	3

\*\* Must be registered in the minor of entrepreneurship and innovation.

**Development courses**

MATH 120	Elementary Algebra	3	Placement
MATH 120-E	Introductory Algebra Intensive	Exam 3	
MATH 121	Intermediate Algebra	Placement	
MATH 151	Pre-Calculus I	Exam 3	
ENGL 152-E	Fundamentals of Reading and Writing	Placement	
Enhanced SPAN 152-I	Fundamentals of Reading and	Exam 4	
Writing Intensive		Placement	
		Exam	

**Important notes:**

1. Some of the required or elective specialty courses are not offered every semester.

2. Universidad Ana G. Méndez-Recinto de Gurabo reserves the right to make changes to this curriculum.

**MECHANICAL  
ENGINEERING  
PROGRAM**



Engineering  
Accreditation  
Commission

The Mechanical Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

### WHAT IS A MECHANICAL ENGINEER?

Mechanical engineers apply physical principles in the creation of useful devices, objects and machines. They design and develop everything that you may think of as a machine: from supersonic jets, to automobiles, to bicycles to toasters. The designs are analyzed using mathematics and physical principles of motion, energy, and force to ensure that the product functions reliably. In many cases the analyses are performed using impressive and exciting state of the art computer aided design (CAD) software. Mechanical engineers also strive to create designs that can be manufactured at a competitive cost. Maintenance of the product after design and fabrication is also of concern to mechanical engineers. Practically every product or service in modern life has been touched in some way by a mechanical engineer. This makes mechanical engineering one of the oldest, one of the broadest, and one of the most exciting engineering disciplines.

The two main subdivisions within mechanical engineering are **mechanical systems** and **thermal/fluid systems**.

- In the area of **mechanical systems**, mechanical engineers design the solid components of a system. Knowledge of materials and manufacturing processes is required. Typical applications include:
  - ✓ The suspension and steering systems of a car.
  - ✓ The pistons, the rods, the crankshaft, and other solid components of an engine.
  - ✓ The landing gear of aircraft and other complex aerospace components.
  - ✓ All kinds of machinery such as cranes, lathes, and ski lifts, to name a few.
  - ✓ All the mechanisms and other solid components of household items such as washing machines, dryers, refrigerators, and automatic gate openers.

- In the area of **thermal/fluid systems**, mechanical engineers utilize heat and fluid energy to convert it into useful work to satisfy a particular need. Typical applications include:
  - ✓ The design of water distribution systems inside buildings including the fluid mechanics calculations to determine the required capacity of the pumps, and the required pipe diameters.
  - ✓ The design of heating, ventilation and air conditioning systems (HVAC) that maintain a comfortable state inside enclosed areas and, in some cases, such as hospitals and pharmaceutical facilities, maintain strict parameters of cleanliness.
  - ✓ The design of steam turbines and boilers used in the power industry to generate electricity including the calculations based on the Rankine cycle, one of the most used thermodynamic power cycles.
  - ✓ The design of gas turbines used for jet propulsion as well as in the power industry (coupled to an electric generator) to generate electricity. These require an understanding of the thermodynamic combustion process, the aerodynamics of turbine blades, and basic concepts of electrical networks.
  - ✓ The design of heat exchangers that extract heat energy from nuclear reactors.

Most mechanical engineering systems require the integration of **mechanical systems** and **thermal/fluid systems**; however, in most cases, mechanical engineers specialize in only one area. For this reason, a group is usually required to incorporate all areas. In the PE Exam, an eight-hour exam required for licensure, the exam taker must choose one of the three different modules in the afternoon (in-depth) portion of the exam: HVAC, Thermal and Fluid Systems, and Machine Design. However, the exam taker must demonstrate competency in all areas in the morning (breadth) portion of the PE Exam.

### WHAT ARE YOUR CAREER OPTIONS AFTER GRADUATION?

There are many career options that you may explore after graduation. Some professionals elect to stay in the same place their entire lives. Others like to change periodically. As you will see, the Mechanical Engineering degree gives you a very high degree of mobility. Some of your options after graduation are:

#### US Government and the Military

With the baby boomer generation retiring, there are literally thousands of engineering jobs that have to be filled in the US Government and the Military. Many of our graduates have elected this option and are happily settled in the mainland USA working as engineers.

## Graduate School

Are you still thirsty for more knowledge? Do you enjoy research? If that is the case then graduate school may be your best option. Many ME graduates from Universidad Ana G. Méndez – Gurabo Campus have continued studies in universities in Puerto Rico and the mainland USA, including UPR, Cornell, Stanford, Georgia Tech, Purdue, RPI, and Michigan Tech, among others. If you earn a Teaching Assistantship while pursuing a Master's degree and you discover that you like teaching, then a good decision may be for you to continue studying towards a PhD degree and enter academia as an engineering professor.

## Research Labs

There are several Research Laboratories in the mainland USA. Some are government owned while others are private research centers searching for profitable future innovations. The Sandia National Laboratory, a government laboratory after which the main building of this School is named, employs several of our graduates, all of which have continued their graduate studies and earned MS degrees.

## Preparation for other Professions such as Law, Medicine, Business

The expertise in problem-solving that you achieve in the Mechanical Engineering curriculum will serve you well for exploring any other profession. Many patent lawyers have a mechanical engineering degree that serves them well to better understand inventions. Many dentists involved in research have mechanical engineering degrees which assist them in designing and fabricating specialized machines and mechanisms for their research. Many high-level managers with MBA's start out with an engineering degree.

## VISION

To become the number one choice for all motivated students who wish to pursue a mechanical engineering education in Puerto Rico.

## MISSION

To professionally prepare mechanical engineering graduates who are capable of fulfilling the technological needs of society and excel in the design and realization of mechanical and thermal systems.

## GOALS

1. To provide a thorough education in the fundamentals of mechanical engineering, including thermal, fluid, and

mechanical systems, in order to sustain an excellent and accredited undergraduate program with the following expectations for our students, within a few years after graduation:

- to be gainfully employed in mechanical engineering (or related disciplines) or to be in good academic standing in a program of graduate studies in a variety of fields, including mechanical engineering;
- to be engaged in activities that promote their professional development;
- to participate in organizations that serve their profession.

**Goal 1 represents the Program Educational Objectives as defined by ABET**, that is, "broad statements that describe what graduates are expected to attain within a few years of graduation. Program educational objectives are based on the needs of the program's constituencies."

Goals 2 through 6 of the Mechanical Engineering program are not Program Educational Objectives as defined by ABET but rather general goals that set the direction for the ME department; these are:

2. To search for, develop, and use the most effective teaching/learning methodologies that deliver graduates with the attitude and ability to apply practical knowledge in the workplace.
3. To promote scholarly research activities between students and faculty, and to gradually transition from a teaching program, to a teaching-and-research program.
4. To encourage enrichment of the educational experience through participation in student chapters of professional societies, special student projects, and industry internships.
5. To review, assess and improve the program on a continuous basis.

## OUTCOMES

(What students should know and should be able to do by the time of graduation. The program outcomes are covered through coursework. Each course in the curriculum addresses at least one of the outcomes listed below.)

- a. An ability to apply knowledge of mathematics, science and engineering.
- b. An ability to design and conduct experiments, as well as to analyze and interpret data.

- c. An ability to design a system, components or processes to meet desired needs.
- d. An ability to function on a multidisciplinary team.
- e. An ability to identify, formulate, and solve engineering problems.
- f. An understanding of professional and ethical responsibility.
- g. An ability to communicate effectively.
- h. A broad education necessary to understand the impact of engineering solutions in a global and societal context.
- i. A recognition of the need for, and an ability to engage in life-long learning.
- j. A knowledge of contemporary issues.
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
- l. An ability to work professionally in both thermal and mechanical systems areas including the design and realization of such systems.

### MECHANICAL ENGINEERING FACULTY

**Albert Espinoza** / Instructor  
Ph.D., University of Texas, Austin

**Amaury Malavé** / Associate Professor and Director of Puerto Rico Energy Center (PREC)  
Ph.D., University of Wisconsin, Madison

**Bernardo Restrepo** / Associate Professor  
Ph.D., West Virginia University

**Eduardo Castillo** / Assistant Professor  
Ph.D., Rensselaer Polytechnic Institute

**Gerardo Carbajal** / Professor  
Ph.D., Rensselaer Polytechnic Institute

**Juan C. Morales, P.E.** / Professor and Mechanical Engineering Department Head  
Ph.D., Universidad de Puerto Rico

### MECHANICAL ENGINEERING TECHNICAL STAFF

**José Santana** / Machine Shop Coordinator  
AD, Technological Institute of Puerto Rico

**Miguel Delgado** / Mechanical Engineering Lab. Director  
M.S., Universidad del Turabo

### BACHELOR'S DEGREE IN SCIENCE WITH CONCENTRATION IN MECHANICAL ENGINEERING

<b>Total Credits</b>	<b>131</b>
<b>General Education Courses</b>	<b>58</b>
<b>Core Courses</b>	<b>19</b>
<b>Concentration Courses</b>	<b>45</b>
<b>Elective Courses</b>	<b>9</b>

<b>General Education Courses</b>	<b>58</b>	
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
MATH 152	Pre-Calculus II	4
PHSC 215	Physics for Engineering I (includes Lab)	4
CHEM 203	General Chemistry I	4
HUMA 111	Civilizations and Universal Culture I	3
111	Individual, Community, and Social Responsibility I	3
SOSC 112	Individual, Community, and Social Responsibility II	3
FSEN 105	Introduction to Engineering	3
MATH 221	Calculus I	4
MATH 222	Calculus II	4
MATH 223	Calculus III	4
MATH 395	Differential Equations	3
PHSC 216	Physics for Engineering II (includes lab)	4

<b>Core Courses</b>	<b>19</b>	
ENGI 122	Introduction to Computer Programming	3
ENGI 160	Engineering Graphics	3
ENGI 277	General Statics and Dynamics	3
ENGI 280	Data Analysis	3
ENGI 478	Fundamentals of Engineering	3
ELEN 301	Electrical Networks I	3
ELEN 302	Electrical Networks I Laboratory	1

<b>Concentration Courses</b>	<b>45</b>	
ENGI 244	Engineering Materials	3
ENGI 305	Fluid Mechanics	3
ENGI 318	Strength of Materials	3
ENGI 319	Materials Testing Laboratory	1
ENGI 333	Machine Shop Laboratory	1
MEEN 312	Kinematics of Mechanisms	3
MEEN 320	Thermodynamics I	3
MEEN 340	Computer Aided Design	3

ENGI 406	Fluid Mechanics Laboratory	1
MEEN 418	Experimental Methods	1
MEEN 420	Heat Transfer	3
MEEN 421	Thermodynamics II	3
MEEN 425	Design of Machine Elements	3
MEEN 475	Multidisciplinary Experience in Industry	

Lab 1

MEEN 460	Control of Dynamic Systems	3
MEEN 461	Controls Laboratory	1
MEEN 481	Mechanical Systems Design	3
MEEN 485	Thermal Systems Design	3
MEEN 464	Mechanical Vibrations	3

**Elective Courses 9**

MEEN 465	Vehicle Dynamics Fundamentals	3
MEEN 482	Failure of Materials in Mechanical Design	3
MEEN 484	Corrosion in Metals	3
MEEN 489	Air Conditioning	3
MEEN 497	Special Problems	3
MEEN 498	Undergraduate Research I	3
MEEN 499	Undergraduate Research II	3
INNO 300*	Sustainable Innovation	3

(\*Must be registered in the minor of entrepreneurship)

INNO 303*	Product Development, Prototyping and Idea Validation	3
-----------	--	---

(\*Must be registered in the minor of entrepreneurship)

IMEN 341	Accounting and Finance for Engineers	3
----------	--------------------------------------	---

**Alternative Energy Courses**

MEEN 641	Sustainable Energy	3
MEEN 462	Grid Integration	3
MEEN 643	Energy Management	3
MEEN 644	Photovoltaic Energy Conversion	3
MEEN 646	Solar Refrigeration and Air Conditioning	3
MEEN 648	Advanced Topics in Alternative Energy	3
MEEN 649	Independent Study in Alternative Energy	3
MEEN 651	Ocean Energy	3
MEEN 652	Biofuels	3

**Aerospace Engineering Courses**

MEEN 502	Aircraft Design	3
MEEN 503	Fundamentals of Aerospace Engineering	3
MEEN 612	Aerospace Structural Analysis	3
MEEN 613	Flight Mechanics	3
MEEN 614	Propulsion Systems	3
MEEN 615	Aerodynamics II	3
MEEN 622	Compressible Flow	3
MEEN 624	Combustion	3
MEEN 628	Advanced Topics in Aerospace	
	Engineering	3
MEEN 629	Independent Study in Aerospace	

Engineering 3

**Additional Courses that may be used as ME Electives**

MEEN 501	Finite Element Analysis	3
MEEN 601	Advanced Mathematics	3
MEEN 602	Advanced Mechanics of Material	3
MEEN 603	Advanced Fluid Mechanics	3
MEEN 604	Aerodynamics I	3
MEEN 611	Composite Materials	3
MEEN 616	Introduction to Aeroelasticity	3
MEEN 621	Boundary Layers	3
MEEN 623	Multi-scale Turbulence	3
MEEN 645	Wind Energy	3
MEEN 671	Advanced Heat Conduction	3
MEEN 673	Computational Fluid Dynamics (CFD)	3
MEEN 674	Micro and Nano Heat Transfer	3
MEEN 675	MEMS and Energy Harvesting	3
MEEN 676	Design Optimization	3
MEEN 678	Advanced Topics	3
MEEN 679	Independent Study	3
MEEN 681	Introduction to Biomechanics	3
MEEN 682	Systems Engineering	3
MEEN 683	Friction, Wear and Lubrication	3
MEEN 684	Advanced Tribology	3
MEEN 685	Applied Modern Control	3

**Additional Courses that may be used as ME Electives**

IMEN 395	Inferential Statistics for Engineers	3
IMEN 402	Work Measurement	3
IMEN 405	Statistical Quality Control	3
IMEN 416	Design of Industrial Experiments	3
IMEN 205	Introduction Engineering Management	3

**Development courses**

MATH 120	Elementary Algebra	3	Placement Exam
MATH 120-E	Introductory Algebra Intensive	3	Placement Exam
MATH 121	Intermediate Algebra	3	Placement Exam
MATH 151	Pre-Calculus I	4	Placement Exam
ENGL 152-E	Fundamentals of Reading and Writing Enhanced	3	Placement Exam
SPAN 152-I	Fundamentals of Reading and Writing Intensive	3	Placement Exam

**Important notes:**

1. Some of the required or elective specialty courses are not offered every semester.
2. Universidad Ana G. Méndez-Recinto de Gurabo reserves the right to make changes to this curriculum

## CIVIL ENGINEERING PROGRAM



Engineering  
Accreditation  
Commission

The Mechanical Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

### Dr. Nelson R. Gómez-Torres, EIT, Department Head

Most of the infrastructure surrounding you is provided by the work performed by civil engineers. All the buildings, highways, bridges, drainages, channels, water and wastewater systems are designed, built, maintained and improved by civil engineers. Civil engineers use science and mathematics to solve engineering problems in several areas such as: Structural, Geotechnical, Transportation and Environmental Engineering, as well as, Water, Wastewater and Construction Management.

### PROGRAM EDUCATIONAL OBJECTIVES

A few years after graduation, our civil engineering graduates will be able to:

1. Undertake civil engineering design projects giving due consideration to different alternatives, their safety, sustainability and costs, and the needs of stakeholders, while complying with ethical standards in such a way that they become honorable members of our profession.
2. Share, their ideas clearly and thoughtfully with supervisors, associates, clients and the general public, thus demonstrating their expertise verbally and in writing, in both English and Spanish.
3. Recognize the limits of their knowledge, and have the tools and motivation to continue their professional development.

### STUDENT OUTCOMES

Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviors that students acquire as they progress through the program. The civil engineering program

has decided to adopt the student outcomes from ABET. The student outcomes of the program are:

1. an ability to apply knowledge of mathematics, science, and engineering
2. an ability to design and conduct experiments, as well as to analyze and interpret data
3. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
4. an ability to function on multidisciplinary teams
5. an ability to identify, formulate, and solve engineering problems
6. an understanding of professional and ethical responsibility
7. an ability to communicate effectively
8. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
9. a recognition of the need for, and an ability to engage in life-long learning
10. a knowledge of contemporary issues
11. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

### CIVIL ENGINEERING FACULTY

**Luz E. Torres** / Associate Professor  
Ph.D., Universidad de Puerto Rico

**Nelson R. Gómez-Torres, EIT** / Associate Professor and Civil Engineering Department Head  
Ph.D., Universidad de Puerto Rico

**Rolando García, PE** / Associate Professor and Dean Ph.D.,  
Universidad de Puerto Rico

### CIVIL ENGINEERING CURRICULUM

A credits curriculum has been developed to prepare students in the field of Civil Engineering. Courses in civil engineering are incorporated in the curriculum, supported by courses that offer the appropriate background in social and human sciences, Spanish and English languages, mathematics, chemistry, physics, and engineering science. The 132 credits civil engineering program is explicitly described in the next page.

### BACHELOR'S DEGREE IN SCIENCE WITH CONCENTRATION IN CIVIL ENGINEERING

<b>Total Credits</b>	<b>128</b>
<b>General Education Courses</b>	<b>58</b>
<b>Core Courses</b>	<b>18</b>
<b>Concentration Courses</b>	<b>40</b>
<b>Elective Courses</b>	<b>12</b>

**General Education Courses 58**

SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
MATH 152	Pre-Calculus II	4
MATH 152L	Pre-Calculus II Lab	0

CHEM 203	General Chemistry I	4
CHEM 203L	General Chemistry I Lab	0
HUMA 111	Civilizations and Universal Culture I	3
111	Individual, Community, and Social Responsibility I	3
SOSC 112	Individual, Community, and Social Responsibility II	3
BIOL 101	Int. to Biological Sciences I	3
MATH 221	Calculus I	4
MATH 221L	Calculus I Lab	0
MATH 222	Calculus II	4
MATH 222L	Calculus II Lab	0
MATH 223	Calculus III	4
MATH 395	Differential Equations	3
PHSC 215	General Physics for Engineering I	4
PHSC 215L	General Physics for Engineering I Lab	0
PHSC 216	General Physics for Engineering II	4
PHSC 216L	General Physics for Engineering II Lab	0

**Core Courses 18**

FSEN 105	Introduction to Engineering	3
ENGI 160	Engineering Graphics	3
ENGI 122	Introduction to Computer Programming 3	ENGI 277
ENGI 277	General Statics and Dynamics 3	ENGI 318
ENGI 318	Strength of Materials 3	
ENGI 280	Data Analysis	3

**Concentration Courses 40**

CIEEN 411	Principles of Surveying for Engineers	3
CIEEN 420	Civil Engineering Materials	3
CIEEN 420L	Civil Engineering Materials Laboratory	1

CIEEN 430	Structural Analysis I	3
CIEEN 432	Reinforced Concrete Design	3
CIEEN 434	Structural Steel Design	3
CIEEN 440	Introduction to Geotechnical Engineering 3	
CIEEN 440L	Introduction to Geotechnical Engineering Lab	1
CIEEN 444	Foundation Engineering	3
CIEEN 450	Hydrology & Hydraulics	3
CIEEN 465	Water and Wastewater Engineering	3
CIEEN 461L	Introduction to Environmental Engineering Laboratory	1
CIEEN 470	Construction Project Management	3
CIEEN 480	Transportation and Traffic Engineering	3
CIEEN 484	Highway Engineering	3
CIEEN 490	Civil Engineering Design Project	3

**Elective Courses 9**

CIEEN 403	Special Topics: Structures and Geotechnics	3
CIEEN 406	Special Topics: Environmental and Water Resources	3
CIEEN 407	Special Topics: Construction Management	3
CIEEN 408	Special Topics: Transportation	3
CIEEN 431	Structural Analysis II	3
CIEEN 436	Design of Wood Structure	3
CIEEN 461	Introduction to Environmental Engineering for CE	3
CIEEN 474	Construction Cost Estimates	3
CIEEN 498	Undergraduate Research I	3
CIEEN 499	Undergraduate Research II	3

**Entrepreneurship and Innovation<sup>1</sup> INNO 300 Sustainable Innovation 3**

INNO 303	Product Development, Prototyping & Idea Validation	3
MANA 204	Mercantile Law and Corporate Ethics (or IMEN 341)	3

**Free Elective Courses 3 COURSE DESCRIPTIONS**

**CIEEN 410 Principles of Surveying Two Credits**

Two hours of lecture per week. Basic concepts of surveying such as units of measurement, vertical and horizontal distance, and

<sup>1</sup> Students pursuing the minor in Entrepreneurship and Innovation must take at least one course of the minor sequence outside the School of Engineering as a free elective course.

angle measurement. Surveying application topics include Control Surveys, Topographic Surveys, Global Positioning Systems and Geographic Information Systems.

#### **CIEN 420**

##### **Civil Engineering Materials**

###### **Two Credits**

Two hours of lecture per week. Analysis of mechanical and non-mechanical properties of civil engineering materials. Description of the production process of steel, aluminum, asphalt, composites and Portland cement.

#### **CIEN 420L**

##### **Civil Engineering Materials Laboratory**

###### **One Credit**

Three hours of laboratory work per week. Laboratory testing of mechanical and non-mechanical and nonmechanical properties of civil engineering materials.

#### **CIEN 430**

##### **Structural Analysis I**

###### **Three Credits**

Three hours of lecture per week. Classification of design loads. Analysis and calculation of reactions, internal forces and deflections of statically determinate and indeterminate beams, frames and trusses. Construct influence lines for statically determinate structures.

#### **CIEN 431**

##### **Structural Analysis II**

###### **Three Credits**

Three hours of lecture per week. Analysis of statically indeterminate beams, frames and trusses using the displacement method. Fundamental concepts of the stiffness method for structural analysis.

#### **CIEN 432**

##### **Reinforced Concrete Design**

###### **Three Credits**

Three hours of lecture per week. Analysis of reinforced concrete members subject to flexure, axial and shear loads. Topics include design of slabs, beams, columns and spread footings based on the strength design method.

#### **CIEN 434**

##### **Structural Steel Design**

###### **Three Credits**

Three hours of lecture per week. Behavior and design of structural steel members including tension members, welds, laterally supported and continuous beams, columns, and connections based on the Load and Resistance Factor Design method.

#### **CIEN 436**

##### **Design of Wood Structures**

###### **Three Credits**

Three hours of lecture per week. Analysis and design of wood structures. Topics include design of beams, columns, roof diaphragms, shear walls and connections.

#### **CIEN 440**

##### **Introduction to Geotechnical Engineering**

###### **Two Credits**

Two hours of lecture per week. Engineering properties of soils including their descriptions and classifications, the effects of water, soil strength and compressibility. Consolidation, permeability and seepage characteristics of soils.

#### **CIEN 440L**

##### **Introduction to Geotechnical Engineering**

###### **Laboratory**

###### **One Credit**

Three hours of laboratory per week. Laboratory methods to determine engineering properties of soils. Laboratory tests will be conducted to obtain index and mechanical properties such as water content, specific gravity, grain size distribution, permeability, rate of volume change and strength.

#### **CIEN 444**

##### **Foundation Engineering**

###### **Three Credits**

Three hours of lecture per week. Analysis and design of foundations for engineering structures and the evaluation of subsoil conditions as they affect their behavior, proportions, and choice of type of said foundation.

#### **CIEN 450**

##### **Hydrology and Hydraulics**

###### **Three Credits**

Three hours of lecture per week. Fundamental principles of fluid mechanics, and their application to the hydrologic flow components and to the operation of pipeline, pump, and open channel hydraulic systems.

#### **CIEN 460**

##### **Introduction to Environmental Engineering**

###### **Two Credits**

Two hours of lecture per week. Fundamental concepts in environmental engineering concerning global warming, sustainability, water quality and treatment, wastewater treatment, air pollution, solid-waste management, and green engineering.

#### **CIEN 460L**

### **Introduction to Environmental Engineering**

#### **Laboratory**

#### **One Credit**

Three hours of laboratory per week. Laboratory methods and interpretation of results for chemical and biological analyses of water and wastewater. Testing procedures such as solids determination, measurement of chemical oxygen demand and dissolved oxygen, chloride concentration, and chlorine demand will be conducted to determine water quality.

### **CIEN 465**

#### **Water and Wastewater Engineering**

#### **Three Credits**

Three hours of lecture per week. Water and wastewater treatment systems and their design. Analysis and design of water transmission, distribution and collection systems. Study of the physical, chemical and biological principles related to water and wastewater treatments.

### **CIEN 470**

#### **Construction Project Management**

#### **Three Credits**

Three hours of lecture per week. Construction management tasks such as project documentation, job scheduling, cost estimating, quality control, and safety management.

### **CIEN 474**

#### **Construction Cost Estimates**

#### **Three Credits**

Three hours of lecture per week. Principles and techniques of estimating construction costs, with emphasis on quantity take-off and pricing elements of work.

### **CIEN 480**

#### **Transportation and Traffic Engineering**

#### **Three Credits**

Three hours of lecture per week. Fundamental principles of traffic flow, operations, and controls. Capacity analysis and level of service evaluation of highways.

### **CIEN 484**

#### **Highway Engineering**

#### **Three Credits**

Three hours of lecture per week. Geometric design of highways. Analysis, behavior, performance, and structural design of pavements for highways.

### **CIEN 490**

#### **Civil Engineering Design Project**

#### **Three Credits**

Three hours of lecture per week. Design of a project that integrates technical areas of the civil engineering profession. Development of design alternatives, including computational methodology, plans, cost estimates, and specifications.

### **CTEC 200**

#### **Computers & Peripherals Installation, Maintenance,**

#### **and Support**

#### **Four Credits**

Three lecture hours and one three-hour lab per week. This course covers all components and ancillary systems comprising a PC. It provides an introduction to every component and analyzes its functionalities and weaknesses. It analyzes the role of each component in supporting an application and the user functional goal. It presents the PC as a package of matched components and dissects all of its internals individually and integrally. Some of the components covered are the CPU, RAM, display apparatus, ROM, fixed disk, USB, network adapter, CD-ROM, CDRs, DVDs, floppy disk, serial and parallel ports, mouse, keyboard and others. The course also covers the most critical peripherals such as printers, scanners, digital imagery equipment, modems, and others.

### **CTEC 205**

#### **Computers, Peripherals and Operating Systems**

#### **Three Credits**

Two lecture hours and one three –hours lab per week. This course covers all components and ancillary systems comprising a personal computer. It provides an introduction to every component and analyses its functionalities and weaknesses. It presents the PC as a package of matched components and dissects all of its internals individually and integrally. Also this course covers all software components comprising a PC. It analyses the role of each component in supporting an application and the user functional goal. Some of the software components are the operating system and its subcomponents. It covers software problems in detail.

### **CTEC 210**

#### **Operating Systems, Installation & Configuration**

#### **Four Credits**

Three hours of lecture and one three-hour lab per week. This course covers all software components comprising a PC. It provides an introduction to every component and analyzes its functionalities and weaknesses. It analyzes the role of each component in supporting an application and the user functional goal. It presents the PC as a package of matched components and dissects all of its internals individually and integrally. Some of the software components are the operating system and its subcomponents, data communications software components, DOS components, peripheral administration components, Windows Systems architecture, disk operating software,

essential user applications, memory management software, software upgrades management. It covers the diagnosis, procedures and resolution of software problems in detail. It also deals with virus problems and the most effective software solutions. Finally, it covers networking from a software perspective.

#### **CTEC 220**

##### **Fundamentals of Computers, Peripherals and Operating Systems**

##### **Three Credits**

This course covers all components and ancillary systems comprising a personal computer. It provides an introduction to every component and analyses its functionalities and weaknesses. It presents the PC as a package of matched components and dissects all of its internals individually and integrally. Also this course covers all software components comprising a PC. It analyses the role of each component in supporting an application and the user functional goal. Some of the software components are the operating system and its subcomponents. It covers in detail software problems in detail.

#### **CTEC 220L**

##### **Laboratory of Fundamentals of Computers, Peripherals and Operating Systems**

##### **Three Credits**

This laboratory course provides students with theoretical concepts and practical skills in using personal computers and peripherals. It discusses the concepts of "motherboard", input and output ports, power supplier, update, and preventive maintenance, among others. The issues are addressed to the operating principles, selection and specifications for personal computers. This course also prepares students to take the certification exam for personal computers "A +".

#### **CTEC 222**

##### **Principles of Computers, Peripherals and Operating Systems**

##### **Three Credits**

This course covers all components and ancillary systems comprising a personal computer. It provides an introduction to every component and analyses its functionalities and weaknesses. It presents the PC as a package of matched components and dissects all of its internals individually and integrally. This course also covers all software components comprising a PC. It analyses the role of each component in supporting an application and the user functional goal. Some of the software components are the operating system and its subcomponents. It covers software problems in detail.

#### **CTEC 310**

##### **Data Communications and Networks**

#### **Four Credits**

Three hours of lecture and one 3-hour lab per week. Basic principles involved in the design and implementation of data networks. The course covers the historical evolution of distributed computing, which has taken place as a result of advancing technologies. It identifies the types of communications networks that have evolved, based on the various technological configurations. The different electrical characteristics of data transmission are also covered, along with the basic laws and theories that determine their use. The various techniques that enable the receiving of data and bit error protocols are discussed in detail, along with the techniques to control transmission errors and flow. Standard data links and encryption protocols are also covered as well as the concepts of "computer communities". Finally, the protocols for the implementation of Data Communications are presented.

#### **CTEC 320**

##### **Introduction to Programming with C++**

##### **Four Credits**

Five hours of lecture and laboratory per week. This course will develop students' theoretical knowledge and the necessary technical skills in the use and handling of the programming in C++ language. It includes the analysis of the basic elements of programming, such as: solving problems, algorithms and development of a flowchart. Variables, structures, functions, arrangements and sequences will also be discussed.

#### **COMP 311**

##### **Discrete Mathematics for Engineers**

##### **Three Credits**

Three hours of lecture per week. This is an introductory course in discrete mathematics. It covers fundamentals of logic, proofs, set theory, number theory, finite state machines, computational complexity, recurrence relations, discrete probability, and graph theory with an emphasis on engineering applications.

#### **COMP 315**

##### **Analysis and Design of Data Structures and Algorithms**

##### **Three Credits**

Three hours of lecture/laboratory per week. This course is an introduction to two fundamental topics in computer engineering: data structures and algorithm design. Topics include design of efficient algorithms, abstract data types such as linked lists, queues, stacks, binary trees, complexity analysis, sorting, searching, and recursive algorithm.

#### **COMP 411**

##### **Numerical Methods with Programming**

##### **Three Credits**

Three hours of lecture per week. This course targets students who have working knowledge in one or more programming languages such as C, C++, and Java, or computational tools such as Matlab. This course introduces algorithm development to solve mathematical problems such as root finding, interpolation and approximation, integration, solution to initial value problems (IVP) arising from first- and second-order ordinary differential equations (ODE), and direct and iterative methods for solving systems of linear equations.

**CPEN 358**  
**Object-Oriented Programming**  
**Three Credits**

Three hours of lecture/laboratory per week. Introduction to object-oriented programming and design using JAVA. Techniques for object-oriented programming including Java classes, inheritance, composition, virtual functions and polymorphism, stream input/output, templates, and exception handling are presented.

**CPEN 425**  
**Software Engineering**  
**Three Credits**

Three hours of lecture per week. This course covers the techniques used during the software development cycle: specification, design, testing, documentation, and maintenance. Software and hardware integration is also discussed. The course requires the design, implementation, and management of a software engineering project.

**CPEN 444**  
**Computer Architecture and Organization**  
**Three Credits**

Three hours of lecture per week. Survey of the basic concepts of computer design. Information representation, instruction sets, addressing modes, arithmetic/logic units, floating point units, control units, microprogramming, hardwired control, memory hierarchy, caches, associative memory, memory management, input-output, DMA, interrupts, system organization, CISC, RISC, super scalar machines, special purpose machines, and multiprocessing.

**CPEN 452**  
**Operating Systems**  
**Three Credits**

Three hours of lecture/laboratory per week. Introduction to basic operating systems concepts, UNIX operating system, process management, communication and scheduling; I/O devices, drivers, interrupts handlers, and deadlock; memory management, swapping and virtual memory; file systems, security, and protection mechanisms.

**CPEN 455**  
**Introduction to Databases**  
**Three Credits**

Three hours of lecture/laboratory per week. This is an introductory course in database management systems with emphasis on relational database design and applications development. Topics include entity-relationship model, relational model, object-oriented model and objectrelational model; database design techniques such as E-R modeling, E-R to relational mappings, functional, and normalization; structured query language (SQL); applications servers and DBMS; transaction processing and database recovery; DBMS implementation techniques such as storage management, indexing, and access methods, query evaluation, and optimization.

**CPEN 456**  
**Database Management Systems**  
**Three Credits**

Three hours of lecture per week. This course introduces some techniques for traditional building of relational database management systems (DBMS). The course focuses on design, implementation, performance, and reliability considerations for DBMS. It emphasizes database engine architecture, disk storage organization, buffer management, B+-trees indexing, hash-based indexing, traditional joint algorithms, two-phase locking and concurrency, write-ahead logging, query optimization, database benchmarking, object-oriented databases, data warehousing, and data mining.

**CPEN 457**  
**Programming Languages**  
**Three Credits**

Three hours of lecture per week. Comparative study of programming paradigms including imperative, objectoriented, functional, logic, and concurrent programming with focus on main features produced by different languages for specific applications. Topics include formal specification of the syntactic structure of a language, context-free grammars, parsing, and principles of language design.

**CPEN 458**  
**Introduction to Compilers**  
**Three Credits**

Three hours of lecture per week. This course is an introduction to specifications and implementation of modern compilers. It addresses the techniques involved in source languages analysis and efficient generation of object codes with an emphasis on the components of a compiler. Topics include lexical analysis, parsing, type checking, code generation and translation,

optimization, and implementation of modern programming languages.

#### **CPEN 459**

##### **Artificial Intelligence**

##### **Three Credits**

Three hours of lecture per week. This course will introduce the basic principles in artificial intelligence research. Topics include simple representation schemes, problem solving paradigms, constraint propagation, and search strategies. Application areas such as knowledge representation, natural language processing, expert systems, robotic vision and machine learning will be explored.

#### **CPEN 478**

##### **Distributed Systems**

##### **Three Credits**

Three hours of lecture per week. This course covers several topics in distributed systems. Topics include operating system architectures, network, distributed, and autonomous systems; design, concurrent programming, client/server models, synchronization, distributed process communication, time and resource scheduling, distributed/shared files and memory.

#### **CPEN 481**

##### **Telecommunication Networks and Security**

##### **Three Credits**

Three hours of lecture per week. This course introduces participants to the key concepts of data communications, telecommunications, networking, technologies, components, and protocols used in local area networking (LAN) and wide area networking (WAN) environments. Students will learn about the popular LAN protocols of Ethernet, Token Ring, and asynchronous transfer mode (ATM), with emphasis on all speeds of Ethernet. This course also introduces the most widely used network operating systems. Basic network design and security concepts are discussed.

#### **CPEN 488**

##### **Advanced Computer Architectures**

##### **Three Credits**

Three hours of lecture per week. This course provides an indepth overview of the current state of the art in highperformance computing. Topics to be covered include the history of computational science, processor architectures, multi-core systems, memory systems for high performance, input/output devices, ultra-scsi, fiber channel, and storage area networks. Introduction to parallel computing, supercomputing, grid computing, cluster computing, Beowulf systems, and performance benchmarks. Survey of supercomputer applications such as scientific visualization, ocean and

atmospheric models, fluid flow, wave propagation, and np-complete problems.

#### **CPEN 493**

##### **Senior Design Project I**

##### **Two Credits**

One two-hour lecture/discussion session and one two-hour seminar/workshop per week. Lecture discussion, seminars, workshops, and laboratory practice on a specific project. Analysis, simulation, and development of a design project. Discussion of alternative designs. Discussion of appropriate standards and realistic design constraints such as cost, environmentally friendly manufacturing, aesthetics, safety, possible social and political impact, and ethical considerations. Ethics workshops. Integration of hardware and software where appropriate. Seminars and workshops on contemporary issues. Teamwork required.

#### **CPEN 494**

##### **Senior Design Project II**

##### **One Credit**

A one and a half hour lecture/discussion session and a one and a half seminar/workshop per week. Hands-on workshops and experimental practice on a specific project. Development, analysis, simulation, and implementation of a major design project to solve a specific problem in an industry or enterprise. Integration of hardware and software where appropriate. Teamwork required.

#### **CPEN 495, 496, 497**

##### **Special Topics**

##### **One, Two, and Three Credits, respectively**

Special topics in computer engineering. Format will depend on course topic.

#### **EETE 210**

##### **DC/AC Electronics**

##### **Four Credits**

Three hours of lecture and one three-hour lab per week. The course centers on basic concepts in the theory of electronic circuit analysis; semiconductor theory; the diode; bipolar junction transistors and BJT amplifiers, and fieldeffect transistors. Frequency response, multistage and operational amplifiers are also covered.

#### **EETE 212**

##### **Digital Electronics**

##### **Four Credits**

Three hours of lecture and one three-hour lab per week. The course covers number systems and codes, digital electronics, signals and switches, logic gates and Boolean algebra, combinational logic circuits, flip-flops and related devices.

Topics include Digital Arithmetic: operations and circuits, as well as code converters, multiplexers and demultiplexers.

**EETE 214**  
**Microprocessors**  
**Four Credits**

Three hours of lecture and one three-hour lab per week. The course is an introduction to microprocessor-based systems. Topics include the 80X86 microprocessor family, software architecture, programming, and hardware architecture, as well as advanced topics.

**EETE 216**  
**Industrial Electronics**  
**Four Credits**

Three hours of lecture and one three-hour lab per week. The course covers the theory and practice of modern electronic devices that are used in industrial applications. Topics include the use of the transistor switch as a decision circuit maker; programmable logic controllers; triacs and thyristors.

**EETE 218**  
**Communications**  
**Four Credits**

Three hours of lecture and one three-hour lab per week. The course covers introductory topics, such as amplitude modulation (AM): transmission and reception; singlesideband communications; frequency modulation (FM): transmission and reception, as well as television and communications techniques.

**EETE 220**  
**Fundamentals of DC/AC Electronics**  
**Three Credits**

In this course the student will learn the basic concepts of the theory of analysis of electronic circuits; theory of semiconductors; the diode; Bipolar Junction Transistor; amplifiers BJT and field effect transistors. In addition, the course covers response of frequencies and operational amplifiers and multistage. Circuits that are used in communication equipment, and systems of sound and instrumentation will also be analyzed.

**EETE 223**  
**Fundamentals of Computers Electronic**  
**Three Credits**

The course covers the theoretical concepts of number systems and codes, digital electronics, signals and switches, logic modules and Boolean algebra, combinational logic circuits and related devices. Topics include Digital Arithmetic: operations and circuits. Code converters, multiplexers and demultiplexers.

Furthermore, analyze digital circuits that are used in computers, communications systems and medical equipment.

**EETE 240**  
**Review for License Examination of Electronic Technician**  
**One Credit**

Two hours lecture per week. The purpose of the course is to revise all the concepts that are necessary to take the final examination for electronics technician. It will cover the concepts of dc/ac, semiconductors, digital electronics, microprocessors, industrial electronics, communications, and instrumentation. At the end of the course a test simulating the final examination for electronics technicians will be offered.

**ELEN 301**  
**Electrical Networks I**  
**Three Credits**

Three hours of lecture per week. Introduction to the analysis of linear circuits. Electrical quantities, Ohm's law, Kirchhoff's current and voltage laws, node voltage analysis, loop analysis, theorems of Thévenin and Norton, maximum power transfer, energy storage, introduction to AC circuits and computer-aided analysis.

**ELEN 302**  
**Electrical Networks I Laboratory**  
**One Credit**

One three-hour laboratory session per week. Application of the theory learned in ELEN 301 Electrical Networks I. Characteristics of electrical components and circuits; use of electronic test equipment.

**ELEN 311**  
**Electrical Networks II**  
**Three Credits**

Three hours of lecture per week. This course introduces the fundamentals of transient state analysis for second order circuits using differential equations, linear circuit analysis in the frequency domain, sinusoidal steady-state analysis and power calculations. Additional topics include Laplace transform techniques, frequency response analysis of balanced three-phase circuits, and two-port circuit analysis.

**ELEN 312**  
**Digital Logic Design I**  
**Three Credits**

Three hours of lecture per week. This course is an introduction to the fundamentals of digital design concepts. The topics covered include positional number systems, switching algebra, logic function minimization, Karnaugh maps, combinational

logic design using SSI, MSI, and LSI, and sequential logic analysis and design.

**ELEN 313**  
**Digital Logic Design I Laboratory**  
**One Credit**

One three-hour laboratory session per week. This laboratory explores the characterization and application of typical digital logic circuits and covers the topics required for analyzing the behavior of logical networks. It reinforces the material covered in Digital Logic Design I (ELEN 312) and introduces material relevant to the use of electronic test equipment.

**ELEN 330**  
**Electronics I**  
**Three Credits**

Three hours of lecture per week. An introductory course in electronics and microelectronics that covers semiconductor fundamentals, operational amplifiers, diodes, BJTs, MOSFETs, and basic digital switching. The course aims to build a solid understanding of these basic electronic devices by providing a clear understanding of device operation on a physical level, and then complements this with applications, analysis, and design of electronic circuits.

**ELEN 332**  
**Electronics I Laboratory**  
**One Credit**

One three-hour laboratory session per week. Laboratory experiments. Design, building, and testing of electronic circuits containing op-amps, diodes, BJTs, and MOSFETs.

**ELEN 360**  
**Random Signals and Systems**  
**Three Credits**

Three hours of lecture per week. This course introduces the physical origins of noise and modeling uncertainty for the analysis of electronic devices, analog and digital systems, and communications. The course covers basic discrete and continuous probability theory, random variables, and stochastic processes. Applications to the analysis of linear systems in the presence of noise and random signal processing are also presented.

**ELEN 370**  
**Electromagnetics**  
**Three Credits**

Three hours of lecture per week. The course is an introduction to electromagnetic systems. Topics covered are transmission lines, electrostatics, boundary value problems, as well as Maxwell's equations and their applications. Also covered are plane waves, reflection and refraction of plane waves, and

fundamentals of electromagnetic wave propagation and antennas.

**ELEN 415**  
**Signals, Systems and Control**  
**Three Credits**

Three hours of lecture per week. This course covers the mathematical foundations for analyzing signals and linear systems with an engineering orientation. Time- and frequency-domain methods are presented and subsequently applied to analyze and design feedback control systems using classical control theory.

**ELEN 417**  
**Systems Laboratory**  
**One Credit**

One three-hour laboratory session per week. This laboratory course provides practical experiences in control systems. The course encourages students to explore concepts in feedback control systems through laboratory experiments and open-ended projects. Feedback control experiments include modeling, identification, and servomechanism control.

**ELEN 421**  
**Electromechanical Energy Conversion Laboratory**  
**One Credit**

One three-hour laboratory session per week. This laboratory explores the characterization and application of typical electrical energy conversion components. The laboratory experiments include testing and parameter identification for modeling of DC machines, transformers, poly-phase as well as single-phase systems, magnetic circuits, synchronous machines, and induction machines.

**ELEN 422**  
**Electrical Machines**  
**Three Credits**

Three hours of lecture per week. This course deals with the analysis of electrical machines and transformers. Topics include the theory and operation of direct current motors, direct current generators, alternating current motors, alternating current generators and transformers. Also included are alternating current motors and transformers, Both single-phase and three-phase systems are included.

**ELEN 423**  
**Electric Machinery Fundamentals**  
**Two Credits**

One hour lecture/discussion and three hours laboratory practice on specific projects per week. This course centers on the analysis of electrical machines and transformers. Topics include the theory and operation of direct current motors, direct

current generators, alternating current motors, alternating current generators, and transformers. In the alternating current motors and transformers both single-phase and three-phase systems are included.

**ELEN 430**  
**Digital Electronics**  
**Three Credits**

Three hours of lecture/laboratory-practice per week. Theory of operation of transistor-transistor logic (TTL), emitter coupled logic (ECL), metal-oxide-semiconductor (MOS), and complementary MOSFETs (CMOS) gates; time delay, operation of semiconductor memories; programmable logic arrays (PLA); multivibrators; analog gates; analog to digital (A/D) and digital to analog (D/A) converters. Laboratory experiments will be used to reinforce concepts.

**ELEN 431**  
**Electronics II**  
**Three Credits**

Three hours of lecture per week. The course is an introduction to the concepts and techniques of practical electronic design. Topics include single-stage amplifier configurations, multi-stage amplifiers, frequency response, feedback and stability, power amplifiers, active filters, oscillators, and advanced semiconductor properties.

**ELEN 433**  
**Electronics II Laboratory**  
**One Credit**

One three-hour laboratory session per week. Experiments include design, testing, and measurements with advanced electronic circuits, frequency response, power amplification, sinusoidal oscillators, waveform generators, active filters.

**ELEN 434**  
**Instrumentation**  
**Three Credits**

Three hours of lecture per week. The course is an introduction to the design of electronic systems for the measurement of physical variables. Topics include sensors and transducers, signal conditioning, noise, noise reduction techniques, grounding, shielding, signal recovery techniques, sampling, digital-to-analog conversion, analog-to-digital conversion, precision electronics, automated test equipment. The design, construction, and evaluation of instrumentation systems are also included.

**ELEN 436**  
**Power Electronics**  
**Three Credits**

Three hours of lecture per week. Application of electronic devices to the conversion of electrical power. Device fundamentals, controlled rectifiers, AC voltage controllers, AC-DC converters, DC to DC converters, DC to AC inverters, motor controllers, snubbers, thermal design considerations. Design, simulation, construction, and testing of power electronic components and systems.

**ELEN 441**  
**Digital Logic Design II**  
**Three Credits**

Three hours of lecture per week. This course covers additional theoretical and practical aspects in digital systems and sequential logic design. Topics include additional minimization techniques, synthesis techniques, asynchronous sequential logic, interfacing, programmable logic devices, design considerations for practical systems, high speed logic design, design for testability, implementation of logic circuits using MSI, LSI, CPLDs, FPGAs, VHDL, CAD tools, and digital test equipment.

**ELEN 442**  
**Microprocessors I**  
**Three Credits**

Three hours of lecture per week. This is an introductory course in computers and microprocessors. It focuses primarily on software aspects. Topics include CPU architecture, microprocessors, microcontrollers, assembly language programming, interrupts, I/O peripherals, memory, system architecture, and simple interfacing.

**ELEN 443**  
**Microprocessors II**  
**Three Credits**

Three hours of lecture per week. The course centers on advanced topics in microprocessor systems design. Topics included are timing, memory architecture, interrupts, interfacing peripherals, design for testability, system buses, embedded and real-time systems, hardware and software aspects of interfacing, hardware-software tradeoffs, high level languages, in-circuit emulators, disassembling logic analyzers, and simulators.

**ELEN 447**  
**Microprocessors Laboratory**  
**One Credit**

One three-hour laboratory per week. This course covers advanced topics in microprocessor systems design. These include: system timing, memory architecture, interrupts, interfacing peripherals, design for testability, system buses, embedded and real-time systems, hardware and software aspects of interfacing, hardware-software tradeoffs, high level

languages, in-circuit emulators, disassembling logic analyzers, and simulators.

**ELEN 460**  
**Digital Signal Processing**  
**Three Credits**

Three hours of lecture per week. This course provides a practical introduction to digital signal processing concepts. Topics include discrete-time signals and systems, sampling, convolution, z-transforms, frequency response, discrete-time Fourier transform, fast Fourier transform (FFT), and digital filtering (IIR and FIR)

**ELEN 472**  
**Antennas and Transmission Lines**  
**Three Credits**

Three hours of lecture per week. The course is an introduction to analysis, characterization, and design of transmission lines, wave guides, and antennas. Topics include telegraphy equations, lossless lines, characteristic impedance matching, bounded wave propagation modes, cavity resonators, planar and dielectric wave guides, vector potential, antenna types, impedance, radiation patterns, and antenna feeds.

**ELEN 474**  
**Communication Systems I**  
**Three Credits**

Three hours of lecture per week. This course provides an introduction to communication systems. Topics introduced include basic modulation and demodulation techniques and performance of digital communication systems in the presence of noise. Also included are linear modulation, angle modulation, sampling and pulse code modulation, detection-error probability, and behavior of digital communication systems in the presence of noise.

**ELEN 475**  
**Communication Systems II**  
**Three Credits**

Three hours of lecture per week. The course is an introduction to the analysis of analog communication systems in the presence of noise. Topics include signal detection, as well as Introductions to information theory and to error correcting codes.

**ELEN 478**  
**RF Design**  
**Three Credits**

Three hours of lecture per week. This course introduces the fundamentals of radio frequency (RF) circuits and design. It covers the behavior of circuit components at radio frequencies, transmission line theory, the use of Smith charts in impedance

matching, and the design of various RF circuits such as amplifiers, oscillators, mixers, and superheterodyne receivers.

**ELEN 480**  
**Power System Analysis I**  
**Three Credits**

Three hours of lecture per week. This is an introductory course in electrical power systems. The course emphasizes the modeling of power system components, determination of transmission system parameters, generalized network analysis to characterize a power system in steady-state including load-flows. It also incorporates the use of computer software packages to aid in the analysis and design of power systems.

**ELEN 481**  
**Power System Analysis II**  
**Three Credits**

Three hours of lecture per week This is a second course in power system analysis and forms a continuation of the topics introduced in ELEN 480. The course presents the concepts and system analysis and design techniques necessary to evaluate the performance of power systems. Fault analysis of power systems using matrix formulation of bus admittance and impedance matrices is also studied. Balanced three-phase faults as well as unbalance faults are included. Unbalanced systems are analyzed using symmetrical components technique. Power system protection methods and equipment are also studied. The course incorporates the use of computer software packages to aid the analysis and design of power systems.

**ELEN 484**  
**Power Transmission and Distribution**  
**Three Credits**

Three hours of lecture per week. This course deals with power transmission and distribution systems analysis and design. Topics include transmission line characteristics, inductance and capacitance calculations of overhead lines, steady-state analysis, transmission losses, and transmission system design. In the distribution system area, the topics covered include distribution system analysis, voltage regulation, and distribution system design. The course provides a practical insight into the analysis of transmission and distribution systems.

**ELEN 488**  
**Power System Reliability**  
**Three Credits**

Three hours of lecture per week. This is an introductory course in power system reliability evaluation with emphasis on probabilistic techniques. The course introduces the basic reliability concepts using probability and statistics. The significance of outage data collection and classification in

realistic system planning will be examined. The course concludes with a final design project.

### **ELEN 493**

#### **Electrical Engineering Design Concepts**

##### **Two Credits**

One two-hour lecture/discussion session and one two-hour seminar/workshop per week. The course includes lecture discussion, seminars, workshops, and laboratory practice on a specific project. It centers on the analysis, simulation, and development of a design project, and includes discussion of alternative designs. Also included are discussions of alternative designs. Discussion of appropriate standards and realistic design constraints such as cost, environmentally friendly manufacturing, aesthetics, safety, possible social and political impact, and ethical considerations. Ethics workshops will be included. Where appropriate, integration of hardware and software will be discussed. Seminars and workshops on contemporary issues are also included.

Teamwork is required.

### **ELEN 494**

#### **Major Design Experience**

##### **One Credit**

A one and a half hour hands-on workshop and a one and a half hour session of experimental practice per week. Hands-on workshops and experimental practice on a specific project. Development, analysis, simulation, and implementation of a major design project to solve a specific problem in an industry or enterprise. Integration of hardware and software where appropriate. Teamwork required.

### **ELEN 495, 496, 497**

#### **Special Topics**

##### **One, Two, and Three Credits, respectively**

Special topics in electrical engineering. Format will depend on course topic.

### **ELEN 498**

#### **Undergraduate Research I**

##### **Three Credits**

Three hours of seminar per week. This course introduces basic undergraduate research on specific electrical/computer engineering topics.

### **ELEN 499**

#### **Undergraduate Research II**

##### **Three Credits**

Three hours of seminar per week. This course expands the undergraduate research experience in specific electrical/computer engineering topics.

### **ENGI 101**

#### **Introduction to Engineering Technology**

##### **Three Credits**

Three hours of lecture/workshop per week. This is an introductory required course for all first-year associate degree students in computer technology or the engineering technology program. It is an introduction to the various specialties within the engineering and technical profession. Topics include basic concepts of engineering design and technical communication, as well as laws and ethics of the engineering and technical professions.

### **ENGI 121**

#### **Introduction to Computers**

##### **Three Credits**

Three hours of lecture-lab discussion per week. This is an introductory required course for all first-year associate degree students in computer technology or in the engineering technology program. It is an introduction to the history of computers. The course will familiarize students with basic computer software and hardware. Students will also learn to use software packages such as Word, Excel, and Power Point, as well as how to design Internet Web pages.

### **ENGI 122**

#### **Introduction to Computer Programming**

##### **Three Credits**

Three hours of lecture-workshops per week. This course is an introduction to computer programming and the Visual Basic (VB) programming language. The first half of the course covers VB for Applications using Excel and the fundamental programming structures of control statements, loops, operators, and functions. The second half of the course explores programming applications using other VB compiler options. Problem analysis, algorithms, flowcharts, and structured programming concepts are used throughout the course.

### **ENGI 160**

#### **Engineering Graphics**

##### **Three Credits**

Three hours of lecture/studio per week. The course centers on the principles of engineering graphics including free sketching and computer graphics (SolidWorks). Topics include fundamentals of 3D projections and multiview projections; sheet layout and scaling; dimensioning; tolerance; solid modeling; assembly of parts and engineering working drawings.

**ENGI 161****Engineering Technology Graphics****Three Credits**

The course centers on the principles of engineering drawing using sketching and computer graphics (Solid Work). It includes an introduction to descriptive geometry. The fundamentals of orthographic projections, pictorials, auxiliary views, sectioning, dimensioning, tolerance, and working drawings are also presented. In addition, the student will apply freehand techniques to sketch oblique and isometric 3D projections.

**ENGI 223****Intermediate Programming****Three Credits**

Three hours of lecture per week. This is an intermediate level course in computer programming. It provides a wealth of current, real-world applications, and examples drawn from the scientific and engineering fields. It allows students to fully exploit the potential uses of C and C++ programming languages. This course includes problem analysis and design of algorithms, programming structures, modular programming, sorting, searching, pointers, multidimensional arrays, string processing, structures, and file processing.

**ENGI 223L****Intermediate Programming Laboratory****One Credit**

Two one and a half hour of laboratory sessions per week. This is an intermediate-level laboratory course in computer programming. It includes hands-on workshops and experimental practice on two or three projects, as well as development, analysis, simulation, and implementation of a design project to solve a real world problem.

**ENGI 244****Engineering Materials****Three Credits**

Three hours of lecture per week. The course centers on the governing principles of material properties and behavior. Topics include atomic structures and bonding, crystalline structures, defects and dislocations. Diffusion, deformation, and material strengthening are also discussed. Other topics include phase transformations and diagrams, polymers, ceramics, and composites. Corrosion will also be discussed.

**ENGI 277****General Statics and Dynamics****Three Credits**

Three hours of lecture per week. The course is a compendium for non-mechanical engineering majors. In the area of statics,

topics include planar (2D) force/moment vectors and resultants, static equilibrium and free body diagrams. Topics include applications to particles, beams, trusses, and frames. Other topics discussed are friction, centroid and moment of inertia of composite areas, vectors, resultants, and equilibrium of a particle in 3D. In the area of dynamics, topics include planar kinematics/kinetics of particles using rectangular and normal-and-tangential coordinate systems, projectile motion, free body diagrams and kinetic diagrams. Other topics discussed are kinematics of a rigid body rotating about a fixed axis, and velocity analysis of rigid bodies in general plane motion using relative motion analysis. Mass moment of inertia, as well as kinetics of a rigid body in translation and in rotation are also discussed.

**ENGI 305****Fluid Mechanics****Three Credits**

Three hours of lecture per week. The course centers on the fundamental concepts of fluid mechanics and their applications to engineering problems. Topics include fluid statics; integral form for control volumes (conservation of mass, momentum equation, Bernoulli equation); differential form (conservation of mass and an introduction to the Navier-Stokes equation), and dimensional analysis.

The course also includes calculation of head loss in pipes, introduction to boundary layers, and lift and drag forces.

**ENGI 310****General Thermodynamics****Three Credits**

Three hours of lecture per week. This course is designed for engineering students in programs other than mechanical engineering. It includes an introduction to first and second laws of thermodynamics with applications, as well as an introduction to heat transfer with general applications.

**ENGI 318****Strength of Materials****Three Credits**

Three hours of lectures per week. The course centers on the analysis of stress and strain. Topics include stress-strain, torsional and flexural loading, bending moment and shear force diagrams. Other topics discussed include bending, combined loading, stress and strain transformation, beam deflection and the application of superposition. Elastic stability will also be discussed.

**ENGI 319****Materials Testing Lab****One Credit**

One three-hour laboratory per week. The course centers on standard physical tests of engineering materials, including tension, bending, micro-hardness and macrohardness. Basic metallurgy, including grinding, polishing, etching and micro-structure identification are also discussed. Other topics include heat treatment of steel including quenching and the Jominy test.

**ENGI 333**  
**Machine Shop Laboratory**  
**Three Credits**

Three hours of laboratory per week. The course centers on the operation of drills, milling machines, lathes, power saws, and surface grinders. It includes an introduction to precision measuring techniques, as well as an introduction to welding.

**ENGI 398**  
**Engineering Mathematics**  
**Three Credits**

Three hours of lecture per week. This course provides advanced engineering mathematics necessary to analyze and design complex electrical and electronic devices, circuits, and systems. Selected topics from linear algebra, complex variables, and partial differential equations are presented. Topics include matrix algebra, determinants, inverses, eigenvalues and eigenvectors; complex numbers, functions of complex variables, complex integration, complex power series, residue integration; partial differential equations, diffusion equation, wave equation, and Laplace equation. Applications to analysis of linear circuits, control and communication systems, and electromagnetic waves are discussed.

**ENGI 406**  
**Fluid Mechanics Lab**  
**One Credit**

One three-hour laboratory per week. This course focuses on laboratory work that supplements classroom instruction in fluid mechanics phenomena. It includes; measuring devices and techniques, as well as; testing of fluid machinery.

**ENGI 410**  
**Engineering Economy**  
**Three Credits**

Three hours of lecture per week. The course is an introduction to the basic concepts, techniques, and methodologies of engineering economy. These are, useful in evaluating the economic feasibility of engineering systems, projects, and services for effective decisionmaking.

**ENGI 478**  
**Fundamentals of Engineering**  
**Three Credits**

Three hours of lecture per week. The course is a review for the Fundamentals of Engineering (FE) exam to aid student preparation and exam performance.

**ENGY 103**  
**Electrical Energy: Basic Concepts**  
**One Credit**

One hour of lecture per week. A basic course on energy with emphasis on electrical energy and power. It includes definitions, forms, and history, as well as energy and power concepts. Energy and energy sources are discussed according to characteristics such as: sustainability, reliability, efficiency, and costs.

**ENGY 203**  
**Fundamentals of Electrical Energy Systems**  
**One Credit**

One hour of lecture per week. The course centers on the fundamentals of energy, with emphasis on electrical energy. Topics include; units of measurement, conservation, and energy in various contexts. Energy transformations, renewable sources, and availability are also discussed.

**ENGY 303**  
**Energy and Electrical Power Systems**  
**One Credit**

One hour of lecture per week. The course centers on energy and electric power, power transmission, energy and laws of motion. Measurements, limitation, integrating of energy sources, losses, and efficiency are also discussed.

**ETRE 110**  
**Fundamentals of Electrical Circuits and Power**  
**Five Credits**

Seven Lecture -Lab. hours per week. This course introduces the basic concepts of electrical circuits and electric power. The student will have the opportunity to learn and to apply the knowledge of electrical safety, Ohm's Law, Kirchhoff's Law, resistive, capacitive and inductive circuits, magnetism and electromagnetism. In addition, the three-phase system, transformers and power factor will be studied. The course will be complemented by a section of laboratory for the application of its theoretical concepts.

**ETRE 115**  
**Introduction to Renewable Energy**  
**Two Credits**

Four hours lecture. In this course the student will acquire the basics concepts of renewable energy systems. It will examine global climate change, energy use and dependence on fossil

fuels, sustainable energy and vision of current energy demand and patterns supplied. In addition, the student will know the rules and regulations that govern this technology.

#### **ETRE 120**

##### **Electrical Installations and NEC**

##### **Four Credits**

Seven hours lecture-lab per week. This course uses the National Electrical Code (NEC) and other regulations for development of electrical installations on houses and buildings. The student will discuss the following topics; interior and exterior wiring, electrical panels' installation, and lighting fixtures. Use of electrical plans. The course will be supplemented by a laboratory section for the application of theoretical concepts.

#### **ETRE 125**

##### **Fundamentals of Electrical Machinery**

##### **Four Credits**

Seven hours' lecture-lab per week. In this course the student will acquire and apply the theoretical knowledge and the necessary skills in the use and handling of electrical machines. They will study functioning, installation, maintenance and troubleshooting of these equipment. Motors, generators and electrical machines will be used in the laboratory practices.

#### **ETRE 130**

##### **Photovoltaic System and Installation**

##### **Three Credits**

Four hours lecture-lab per week. In this course the student will acquire the knowledge's on photovoltaic systems. Will be studied their parts, operation, installation, and maintenance. PV cells, batteries, charge controllers, inverters and other equipment will be used in the laboratory. The rules and regulations governing this technology will be discussed and applied.

#### **ETRE 140**

##### **Supervised Project**

##### **Three Credits**

Seven hours' lecture-lab per week. In this course the students will apply knowledge gained in previous courses. Through this project they will develop skills that are needed to work in the field of electrical industry. Students will be assessed by their instructor/mentor in the workshop of the project and their class.

#### **ETRE 240**

##### **Electronic for Electricians**

##### **Two Credits**

Four hours lecture-lab per week. This course centers on the basics of electronic circuits. The student will have the opportunity to learn and apply knowledge of diodes, transistors, amplifiers, power supplier, transducers, and integrated circuits.

The course will be supplemented by laboratory sessions dedicated to the application of the theoretical concepts.

#### **ETRE 245**

##### **Wind Power System and Installation**

##### **Three Credits**

Three hours lecture- lab per week. In this course the student will acquire knowledge and skills to work with Wind Power Systems. Their parts, operation, installation, and maintenance will be discussed. Wind turbines, anemometer, inverters and other equipment will be used in the laboratory. The rules and regulations governing this technology will be included and applied.

#### **ETRE 250**

##### **Electrical Controls and PLC**

##### **Four Credits**

Four hours lecture practice per week. This course is designed for the student to acquire knowledge and skills in the use, installation, operation and maintenance of motor controls, electric generators, and other machines. It will study the characteristics of relays, magnetic contactors, solenoids and others electrical control devices.. Students will apply the concepts of Programmable Logic Controllers (PLC). The course will be supplemented by a laboratory section.

#### **ETRE 255**

##### **Review for License Examination of Electrician**

##### **Three Credits**

Three hours lecture/lab per week. The basic knowledge and skills of previous courses will be reviewed. The concepts of analysis, application, operation, and maintenance of electrical systems will be discussed again. Problems in electrical installations, machinery, three-phase systems and controls are included to provide the student with the knowledge and skills necessary to take the electrician's licensing exam offered by the government of Puerto Rico.

#### **ETRE 260**

##### **Electrical Installations**

##### **Three Credits**

This theoretical and practical course contains the installation techniques used in industrial sectors and planning and installation of low and high voltage distribution panels. Topics also include methods of testing and maintenance of low and high voltage distribution panels. The application of safety rules and procedures will also be discussed.

#### **ETRE 265**

##### **Principles of Electrical Controls and PLC**

##### **Three Credits**

This course is designed for students to acquire knowledge and skills in the use, installation, operation and maintenance of

motor controls, electric generators, and other machines. Students will study the characteristics of relays, magnetic contactors, solenoids and others electrical control devices.. They will also apply the concepts of Programmable Logic Controllers (PLC).

### **ETRE 265L**

#### **Laboratory of Principles of Electrical Control and PLC**

##### **One Credit**

This laboratory course provides students with theoretical concepts and practical skills of different types of existing electric control systems. The concepts of magnetic systems and automatic controls will be discussed. Issues regarding operating principles, selection, and specifications of various electrical controls will also be addressed. The use of different control components such as magnetic contactors, timers and counters, programmable logic controllers and others will be discussed, as well as the application of safety rules and codes.

### **FSEN 105**

#### **Introduction to Engineering**

##### **Three Credits**

Three hours of lecture/workshop per week. This is a required introductory course for all first year engineering students. It introduces to the various specialties within the engineering profession, and discusses basic concepts of engineering design and technical communication. Laws and ethics of the engineering profession are also discussed.

**ICET 210****Fundamentals of Instrumentation and Calibration****Three Credits**

Five hours of lecture-lab discussion per week. This course provides the student the basic elements of instrumentation and calibration. The concepts of pressure, temperature, level and flow will be discussed. Topics include the principles of operation, selection and specifications of different instruments. Students will apply the principles of calibration of industrial instruments such as valves, sensors and other components.

**IMEN 205****Introduction to Engineering Management****Three Credits**

Three hours of lecture per week. The course is an introduction to the principles of administration of engineering, including the management functions of planning, decision making, organizing, human aspects, leading, and controlling.

**IMEN 341****Finance for Engineers****Three Credits**

Three hours of lecture per week. The course centers on the Interrelationships between engineering design and business assessment of capital projects. It includes the study of the central role of engineering design in determining a project's implementation and its financial requirements. The course includes theory and practical aspects of accounting principles, financial and risk analysis from an engineering perspective. It emphasizes the understanding and analysis of the three main financial statements: balance sheet, income statement, and cash flow. Cost of capital, sensitivity and risk analysis in engineering projects are also discussed.

**IMEN 390****Engineering Statistics and Data Analysis****Four Credits**

Five hours of lecture/laboratory per week. The course centers on fundamental concepts of variation and approaches to deal with this phenomenon in practice. It includes data analysis and synthesis, axioms of probability, and discrete and continuous random variables with their industrial applications. Random samples, central limit theorem and sampling distributions and their applications will be discussed. Topics include estimation and hypothesis testing on one or two populations and simple regression. Introduction to multiple regression and the use of computer software.

**IMEN 402****Work Measurement****Four Credits**

Three hours of lecture and one two-hour laboratory per week. The course is an introduction to motion and time study, including work design, job analysis, and the techniques of setting time standards.

**IMEN 403****Work System Design****Three Credits**

Three hours of lecture per week. The course is an introduction to ergonomic principles and work environments applied to workplace design.

**IMEN 404****Industrial Safety and Health Management****Three Credits**

Three hours of lecture per week. The course is an introduction to concepts and techniques of safety and health management, based on a modern perspective on compliance with mandatory standards for workplace safety and health.

**IMEN 405****Statistical Quality Control****Four Credits**

Five hours of lecture/laboratory per week. The course centers on the application of engineering statistics to the control and improvement of manufacturing and service processes with an emphasis on quality.

**IMEN 406****Operations Research****Three Credits**

Three hours of lecture per week. The course is an introduction to the operations research modeling approach with emphasis on linear programming and extensions, the simplex method and its applications.

**IMEN 407****Production Planning and Control****Three Credits**

Three hours of lecture per week. The course centers on theoretical and practical aspects of production systems, problem solving, forecasting, aggregate planning, inventory, materials requirements planning, scheduling, integrated production planning and control. The course aims to demonstrate how these can be applied in practice.

**IMEN 408****Facility Layout****Three Credits**

Three hours of lecture per week. This course provides the students analytical methods for designing production and service facilities.

**IMEN 409**  
**Design Project**  
**Three Credits**

Three hours of lecture per week. Analysis, development of alternatives, and presentation of a design project of a company.

**IMEN 411**  
**Systems Analysis and Design**  
**Three Credits**

Three hours of lecture per week. This is a basic course on the analysis and design of computer based information systems, including system requirements analysis and documentation, logical and physical modeling, system architecture, and interface design. The course follows a model-driven approach to system analysis and design, and covers various methodologies for data, process, and objectoriented modeling and design.

**IMEN 413**  
**Probabilistic Models in Operations Research**  
**Three Credits**

Three hours of lecture per week. The course is an introduction to theory and use of stochastic models to represent and improve industrial and service systems. It includes Markov Chains, Queuing Models and Decision Analysis.

**IMEN 414**  
**Systems Simulation**  
**Three Credits**

Three hours of lecture/laboratory per week. This is a basic course on the application of discrete event-based simulation to the design, analysis, and improvement of production, logistics, and service systems. The course includes techniques and methodologies for the generation of random numbers and variates, data collection and analysis, model building using Pro-Model, model verification and analysis, and output analysis.

**IMEN 416**  
**Design of Industrial Experiments**  
**Three Credits**

Three hours of lecture per week. The course centers on fundamental concepts of experimentation-factors, responses, levels, randomization, replication, random error, and blocking. It emphasizes the use of statistical software.

**IMEN 420**  
**Models in Facility Planning & Material Handling**

**Three Credits**

This is a computer-based course that uses models such as forecasting, project control, master schedule, production planning, and inventory control.

**IMEN 421**  
**Engineering Project Management**  
**Three Credits**

Three hours of lecture-discussion per week. The course centers on the theoretical and practical aspects of project planning, organizing, scheduling and resources management. Emphasis is on identifying the main components and life cycle of project management and showing how they may be applied in practice, e.g., capacity increase, new production lines, software development, and enterprise start-ups. The course includes application of project management software.

**IMEN 425**  
**Enterprise Continuous Improvement**  
**Three Credits**

Three hours of lecture per week. Fundamental concepts of Lean Manufacturing, Six Sigma and other contemporary performance improvement methodologies or quality management systems.

**IMEN 495, 496, 497**  
**Special Topics**  
**One, Two and Three Credits respectively**

Special topics in industrial and management engineering. Format will depend on course topic.

**IMEN 498**  
**Undergraduate Research I**  
**Three Credits**

Three hours of seminar per week. This course introduces basic undergraduate research on specific industrial and management engineering topics.

**IMEN 499**  
**Undergraduate Research II**  
**Three Credits**

Three hours of seminar per week. This course expands the undergraduate research experience on specific industrial and management engineering topics.

**INNO 300**  
**Sustainable Innovation**  
**Three Credits**

Three hours of lecture per week. This course examines the innovation process using a trans-disciplinary approach to provide a holistic view of innovation. It borrows on perspectives

from the business, human sciences, design and art, as well as from the technical domains while trying to answer two fundamental questions: How innovation happens and how the process can be sustained and sustainable.

### **MAET 201**

#### **Fundamentals of Manufacturing**

##### **Three Credits**

Three hours of lecture per week. This course covers the basic concepts of manufacturing, its areas, processes and applied technologies. Different manufacturing industries will be discussed and different materials and equipment used for product development will be identified.

### **MEEN 312**

#### **Kinematics of Mechanisms**

##### **Three Credits**

Three hours of lecture per week. Introduction to the kinematics principles of inversion, transmission of motion, and mobility. It includes the analysis of mechanism components such as four-bar linkages, cams, spur gears, and gear trains; synthesis of plane kinematics mechanisms. One or more design projects require the application of course topics.

### **MEEN 320**

#### **Thermodynamics I**

##### **Three Credits**

Three hours of lecture per week. The course centers on the first and second laws of thermodynamics, as well as; properties, equations of state and thermodynamic relations.

### **MEEN 340**

#### **Computer Aided Design**

##### **Three Credits**

Three hours of lecture/studio per week. The course is an introduction to Computer Aided Design. It includes an introduction to Finite Element Analysis. Other topics are finite element modeling using Cosmos Works software, and an introduction to dynamic analysis using the Working Model software.

### **MEEN 401**

#### **Manufacturing Processes**

##### **Three Credits**

Three hours of lecture per week. The course is an introduction to manufacturing. Topics discussed include materials in manufacturing, an overview of casting, bulk deformation, and metal removal processes. Manufacturing process of plastics and composites will also be discussed.

### **MEEN 418**

### **Experimental Methods**

#### **Two Credits**

One hour of lecture and one three-hour laboratory per week. The course centers on principles of measurement. Topics include operational characteristics and limitations of various transducers, error analysis, an introduction to Labview and computer data acquisition.

### **MEEN 420**

#### **Heat Transfer**

##### **Three Credits**

Three hours of lecture per week. The course deals with basic principles and applications of the three heat transfer modes: conduction, convection, and radiation, in steady and unsteady states.

### **MEEN 421**

#### **Thermodynamics II**

##### **Three Credits**

Three hours of lecture per week. The course centers on extensions and applications of the first and second laws of thermodynamics including: real gases, psychrometrics, power and refrigeration cycles, and combustion processes.

### **MEEN 425**

#### **Design of Machine Elements**

##### **Three Credits**

Three hours of lecture per week. The course deals with static and fatigue failure theories. Topics include design of mechanical elements such as springs, threaded fasteners, bearings, gears, shafts, clutches, and brakes.

### **MEEN 451**

#### **Process and Product Design**

##### **Three Credits**

Three hours of lecture per week. The course centers on the dynamics of converting ideas to marketable products. Topics include the role of visual and written communications in market definition and product promotion; impact of new product decisions on the factory; cross-cultural problems in introducing new products overseas; facility layout, material flow, handling systems, design and analysis of work systems.

### **MEEN 460**

#### **Control of Dynamic Systems**

##### **Three Credits**

Three hours of lecture per week. This course introduces fundamental concepts of classical control theory. Topics include dynamical system modeling, the Laplace Transform, representation of systems by means of block diagrams, variables of states, stability of system and control system characteristics, components of feedback control systems,

performance of feedback systems, robustness, and stability. Design techniques such as the root locus method and Bode plots are also presented. The course is enriched by extensive use of computer software to design and simulate complex systems.

#### **MEEN 461**

##### **Controls Laboratory**

##### **One Credit**

One three-hour laboratory session per week. The course centers on the application and practice of control systems. Topics include PLC Programming, MATLAB programming, and Simulink Programming. Students explore concepts in feedback control systems through laboratory experiments (modeling, identification, and servomechanism control) and open-ended projects.

#### **MEEN 464**

##### **Mechanical Vibrations**

##### **Three Credits**

Three hours of lecture per week. The course is an introduction to vibration of mechanical systems. Topics include free vibration of undamped and damped systems, response to harmonic excitation of undamped and damped systems, vibration instrumentation, design and for vibration suppression, as well as free and forced vibration of two degree of freedom system.

#### **MEEN 465**

##### **Vehicle Dynamics Fundamentals**

##### **Three Credits**

Three hours of lecture per week. The course centers on fundamentals of vehicle dynamics. Topics include acceleration and braking performance, road loads and ride, suspension, steering, rollover and tires.

#### **MEEN 474**

##### **Finite Element Analysis with Applications**

##### **Three Credits**

Three hours of lecture/studio per week. The course is an immersion into the use of finite element analysis to solve complex, real-world heat transfer and structural analysis problems. Theoretical knowledge of fundamental finite element concepts are presented. The emphasis is on applications using commercial finite element software.

#### **MEEN 475**

##### **Multidisciplinary Experience in Industry**

##### **One Credit**

Four hours of lectures/workshops per week. The course is a multidisciplinary experience in industry for senior students through projects with local manufacturing industries. Design

content highly dependent on current availability of projects in industry. The course includes seminars on project planning, ethics, communication, value engineering, and job-hunting skills.

#### **MEEN 477**

##### **Solar Technologies**

##### **Three Credits**

Three hours of lecture per week. The course centers on fundamentals of solar energy; spectral distribution, availability of solar energy, thermal energy storage, concentrators, and receivers. Solar-only and solar-hybrid systems, as well as; solar subsystems are discussed.

#### **MEEN 481**

##### **Mechanical Systems Design**

##### **Three Credits**

Three hours of lecture per week. The course consists of major experience in the design experience of an engineering system, including completion of a semesterlength design project, engineering design techniques and methodology.

#### **MEEN 482**

##### **Failure of Materials in Mechanical Design**

##### **Three Credits**

Three hours of lecture per week. The course centers on the design of structures to prevent mechanical failure. Topics include modes and theories of failure, as well as stress, strain, deformation, and their relationships. Fracture and fatigue analysis and prevention are also discussed, as are design against creep, fretting, wear, and corrosion failures.

#### **MEEN 484**

##### **Corrosion in Metals**

##### **Three Credits**

Three hours of lecture per week. The course is an introduction to fundamental principles of corrosion; eight forms of corrosion. Topics includes; electromechanical test methods; corrosion environments; corrosion control methods; failure analysis and economics.

#### **MEEN 485**

##### **Thermal Systems Design**

##### **Three Credits**

Three hours of lecture per week. The course centers on the analysis and design of energy systems. Design content emphasizes sizing of components. Topics include piping networks, heat exchangers, prime movers, and solutions using numerical methods.

#### **MEEN 489**

##### **Air Conditioning**

### **Three Credits**

Three hours of lecture per week. The course centers on the analysis and design of air conditioning and refrigeration systems.

### **MEEN 495, 496, 497**

#### **Special Problems**

#### **One, Two and Three Credits respectively**

Course credit and format will depend on the specific problem. Special design problems will be offered by the engineering faculty.

### **MEEN 498**

#### **Undergraduate Research I**

#### **Three Credits**

Three hours of seminar per week. This course introduces basic undergraduate research on specific mechanical engineering topics. The subjects covered in class are described in terms of experimental and/or numerical or analytical analysis.

### **MEEN 499**

#### **Undergraduate Research II**

#### **Three Credits**

Three hours of seminar per week. This course expands the undergraduate research experience on specific mechanical engineering topics. The proposed subjects covered in class are related to experimental and numerical methods.

### **METE 220**

#### **CAD/CAM Technology**

#### **Four Credits**

Three hours of lecture and one three-hour laboratory per week. The course is an introduction to CAD/CAM. Students generate working drawings of machine parts and/or products. They learn to create 3-D models of mechanical parts using Solid Works surfacing and solid modeling commands.

### **METE 222**

#### **Properties of Materials**

#### **Four Credits**

Three hours of lecture and one three-hour laboratory per week. The course covers the basics required for successful design of machine members, parts and connections. Topics include the selection of materials according to their strength and function, based on testing and design.

### **METE 224**

#### **Manufacturing Process Technology**

#### **Four Credits**

Three hours of lecture and one three-hour laboratory per week. The course is an introduction to manufacturing processes and provides an overview of casting, forming, and metal removal

processes. Manufacturing processes of plastics will also be discussed.

### **METE 226**

#### **Air Conditioning & Refrigeration Technology**

#### **Four Credits**

Three hours of lecture and one three-hour laboratory per week. Refrigeration and air conditioning systems are covered in detail, along with the safe handling of refrigerants. Students will also study fans, fan laws, duct layout and sizing, as they pertain to air conditioning systems. Techniques for designing air conditioning and refrigeration systems for buildings will also be discussed.

### **METE 228**

#### **Mechanical Measurements Technology**

#### **Four Credits**

Three hours of lecture and one three-hour of laboratory per week. The course centers on the study of measurement technology, coordinate measuring machines, surface finish measurements, machine vision, and particle measurement in a clean environment. The monitoring of processes and operations, automatic control and data analysis will also be discussed.

### **METE 230**

#### **Principles of Pneumatic and Hydraulic Systems**

#### **Four Credits**

Two hours of lecture and one three-hour of laboratory per week. This course covers the theoretical and practical principles of hydraulics and pneumatics systems. The student acquires knowledge of the design, installation and repair components such as valves, compressors, actuators, regulators and other associated components. Skills in blueprint reading and schematics related with industrial hydraulics and pneumatics field are also developed.

### **METE 233**

#### **Fundamentals of Refrigeration and Air Conditioning**

#### **Three Credits**

In this refrigeration and air conditioning course, the student will develop knowledge about the following topics: characteristics of refrigerants, temperature, pressure, tools and equipment, welding, system components, compressors, evaporators, and metering devices. Students will also study the burden and evaluation of systems and leak detection. They will also explore basic system maintenance, the use and care of oils and additives, and troubleshooting of small commercial systems.

### **METE 233L**

#### **Laboratory of Fundamentals of Refrigeration and Air Conditioning**

#### **One Credit**

In this laboratory course students will apply the theoretical knowledge acquired in METE 240, Fundamentals of Refrigeration and Air conditioning. The student will learn techniques for leak detection, evacuation, refrigerant charge and the recovery of refrigeration and air conditioning. The course also includes flowcharts, various thermodynamics appendices, conversion factors, coolant pressure and analysis of heating by pressure. The student will also apply the laws of thermodynamics in the course.

**METE 235**  
**Fundamentals of Properties of Materials**  
**Three Credits**

The course centers on the fundamental principles of structure and properties of materials utilized in the practice of technology engineering. Properties of materials are related to atomic, molecular, and crystalline structures. Topics include metals, ceramics, multiphase systems, and polymeric materials. The relationship between structure and electrical, mechanical, thermal, and chemical properties will also be discussed.

**METE 235L**  
**Laboratory of Fundamentals of Properties of Materials**  
**One Credit**

In this laboratory course the theoretical knowledge acquired in the course METE 235 Fundamentals of Properties of Materials will be applied. The student will have the opportunity to develop different types of tests for metals, plastics and wood. Equipment used in the course includes microscopes and hardness equipment, among others. In this course students will also apply all safety rules established for the Mechanical Engineering Laboratory.

**METE 245**  
**Fundamentals of Manufacturing Processes Technology**  
**Three Credits**

In this course the students learn the fundamentals of manufacturing processes, including interrelationships between the properties of the material, the manufacturing process and the design of components. Topics include an overview of casting, forming, and metal removal processes. Manufacturing processes of plastics and wood will be discussed. Emphasis will be on process selection for optimum design.

**METE 245L**  
**Laboratory of Fundamentals of Manufacturing Processes Technology**  
**One Credit**

In this laboratory course students will apply the theoretical knowledge acquired in METE-245 Principles of Manufacturing

Processes Technology. Students will have the opportunity to acquire technical skills in the development of mechanical components. Equipment used includes lathes, milling machines, drills and other specialized equipment for the design industrial parts. Safety rules and procedures will be applied in the laboratory.

**METE 247L**  
**Laboratory of Fundamentals of Welding**  
**One Credit**

In this course the student will acquire knowledge and skills related to the field of welding. The materials, techniques and procedures relating to . The student will have the opportunity to practice oxy-acetylene soldering, shielded metal arc, gas metal and plasma cutting and more. Students will follow all the safety rules that govern this field, as well as the procedure used for the management and use of gas.

**METE 250**  
**Principles of Pneumatics and Hydraulics**  
**Four Credits**

This course covers the theoretical and practical principles of hydraulic and pneumatic systems. The student will acquire knowledge of the design, installation and repair components such as valves, compressors, actuators regulators and other associated components. Skills in blueprint reading and schematics related to the field of industrial hydraulics and pneumatics are developed. The student will apply safety rules and procedures in the laboratory.

**METE 251**  
**Introduction to Industrial Mechanics**  
**Three Credits**

The course provides basic mechanical skills and repair techniques common to most fields of industrial maintenance. Topics discussed include precision measuring instruments and general safety rules common in industry, including lock-out/tag-out. This is a hands-on course and includes troubleshooting and overhaul of mechanical systems such as pumps, assembly lines, conveyors, and associated industrial machinery.

**PHSC 120**  
**Technical Science**  
**Three Credits**

Three hours of lecture and one three-hour lab per week. This is a course designed for technicians who require a working knowledge of the basic principles of physics. The course provides students with an introduction to the basic principles and applications of mechanics, the concepts of rotation, simple harmonic motion, properties of materials, fluids, heat and temperature, and electricity.

**QETE 230****Quality Management Principles****Three Credits**

Three hours of lecture per week. The course focuses on the organizational goal of producing a quality product or service. Topics discussed include the significance and benefits of quality, the cost of quality and problem solving tools for continuous improvement. Other topics discussed are: an overview of quality philosophy, principles of quality, commitment to continuous improvement, customer focus and paradigm shift, understanding process variation and employee involvement.

**QETE 232****Quality Improvement Tools****Three Credits**

Three hours of lecture per week. The course centers on the tools that provide the basics for examining processes and systems and making data-based decisions to improve work processes and systems. The course covers the 7-step improvement process and includes flow-charting, Pareto charts and cause-effect diagrams.

**QETE 234****Statistical Process Control and Metrology****Four Credits**

Three hours of lecture and one three-hour lab per week. The course centers on the basic concepts and applications of Statistical Process Control (SPC). The course covers control charts, including setting scales, charting, interpreting, and analyzing process capability. Problemsolving techniques are emphasized and laboratory exercises are linked to the implementation of SPC in the workplace.

**QETE 236****Process Validation****Three Credits**

Three hours of lecture per week. The course covers validation approaches for characterizing processes, process intermediates and final products. Cost effectiveness is emphasized while determining what levels of validation are required for different phases of development and process improvement. The course includes topics such as validation of water systems, cleaning validation, computer systems validation, equipment validation and recent trends in process validation.

**QETE 237****Industrial Regulations and Validations****Four Credits**

Five hours lecture per week. This course covers the study of current Good Manufacturing Practices (CGMP's) and the series of international quality standards known as ISO 9000 through 9004, ISO 10011, 10012, and ISO 14000. The validation for

characterizing processes, process intermediates and final products. Cost effectiveness is emphasized while determining what levels of validation are required for different phases of development and process improvement also. The course also includes discussions of topics such as validation of water systems, cleaning validation, computer systems validation, equipment validation and recent trends in process validation.

**QETE 238****GMP and ISO Standards****Three Credits**

Three hours of lecture per week. The course centers on the study of Good Manufacturing Practices (GMPs) and the series of international quality standards known as ISO 9000 through 9004, ISO 10011, 10012, and ISO 14000. Emphasis is placed on providing students with an understanding of documentation system for validation of equipment, utilities, analytical methods and processes in a medical manufacturing environment.

**QETE 240****Quality Management Principles and Improvement Tools****Three Credits**

This course focuses on the organizational goal of producing a quality product or service. Topics include the meaning and benefits of quality, the cost of quality, and problemsolving tools for continuous improvement. The course also includes an overview of quality philosophies, principles of quality, commitment to continuous improvement, customer focus and paradigm shift, understanding process variation and employee involvement. Other topics discussed are quality tools that provide the basics for examining processes and systems and making data-based decisions to improve work processes and systems. The course covers the 7-step improvement process, including flow-charting, Pareto charts and cause and effect diagrams.

**TCOM 300****Introduction to Telecommunications****Four Credits**

Three hours of lecture and one three-hour lab per week. Key concepts of telecommunications and networking. The course provides a solid introduction to networking fundamentals including key acronyms, protocols, and components that are essential to understanding how networks operate today. It covers the basic concepts of telecommunications such as analog/digital communications, basic encoding, bandwidth and capacity and serves as a foundation for in-depth study of networking. Upon completion, the participant will have a solid understanding of how information travels from a source computer to a destination computer across a complex network.

**TCOM 320****Telecommunication and Data Networks****Four Credits**

Three hours of lecture and one three-hour lab per week. This course covers the key concepts of telecommunications and networking. It provides a solid introduction to networking fundamentals, including key acronyms, protocols, and components that are essential to understanding how networks operate today. It covers the basic concepts of telecommunications, such as analog/digital communications, basic encoding, bandwidth and capacity and serves as a solid foundation for in-depth study of networking. It identifies the types of communications networks that have evolved based on the various technological configurations and the internetworking process behind data communications. Upon completion of the course, the participant will have a solid understanding of how information travels from a computer to another computer across a network.

**TCOM 330****Network Infrastructure Management****Four Credits**

Three hours of lecture and one 3- hour lab per week. This course concentrates on the Windows/2000 infrastructure management protocol, which is the largest in use on a global scale. Procedures for planning and servicing network infrastructure are discussed. The course covers areas such as protocols, services requiring calculation in the light of the organization needs, packet exchange and sequential packet exchange IPX/SPX, integration with Novell NetWare, TCP/IP. NetBIOS, WINS, DHCP and DNS maintenance and configuration issues. Routing, remote access and VPNs are also covered from an infrastructure and management perspective.

**TDBE 110****Technical Drawing and Blueprint Reading for Electricians****Two Credits**

Four hours lecture - lab per week. This course introduces the student to terminology and applications used at different levels of the electricity industry. Students will review the basic drawing tools and then acquire skills in the development of views, plans and specifications. In addition, they will learn about the types of views in a set of construction drawings and produce clear explanations of their relationships with various electrical installations. The course offers comprehensive and applicable content in the field of electrical drawing.



The School of Health Sciences is the place where excellent health professionals are prepared. Our students are prepared to serve with high integrity and professional ethics, patients of all ages and different conditions in the health areas. With academic offers that cover all academic levels and a variety of educational areas, the School is positioned as the first option for studies in health in Puerto Rico and the Caribbean. The School offers a balanced and unique combination between the academy, research, and clinical services.

### VISION

Being a school recognized for excellence in its academic programs, its specialized accreditations, their contributions to research, and high standards in community services framed within an entrepreneurship, interdisciplinary, and international perspective.

### MISSION

The School of Health Sciences prepares professionals with specialized curriculums that are regulated by specialized accreditation agencies standards. Our graduates are entrepreneurs leaders committed to prevention, holistic health, and research; prepared to serve Puerto Rico and other countries and to perform their duties with strong ethical and moral principles from an interdisciplinary and global perspective.

### OBJECTIVES

Our main objectives are:

1. To respond to the needs of health professionals in our catchment area.
2. To establish a continuous improvement system in our programs to ensure their relevance and applicability to our society.
3. To develop health professionals capable of working in Puerto Rico, as well as in other Spanish-speaking and English-speaking communities.
4. To contribute significantly to the development of students with high humanistic values.
5. To establish academic offerings with the participation of customers, students, health services providers, and accreditation agencies to ensure an effective professional practice that responds to the needs of the community.
6. To effectively implement technology integration in all of our programs.

## SCHOOL OF HEALTH SCIENCES

7. To maximize the relevance of our academic offerings utilizing innovative strategies that will facilitate the transfer of knowledge to the practice of health professions and promote the acquisition of an integrated body of knowledge to be used in solving problems.
8. To establish local and international strategic alliances with health care institutions that can provide practice settings for faculty development and for exchange of resources in the areas of teaching and research.
9. To establish local and international alliances with other universities to increase our students' opportunities to participate in exchange programs that will broaden their vision of the health professional role.
10. To develop basic and applied research projects in the area of health, geared to the improvement of the quality of life in Puerto Rico and other communities.

### GOALS

1. Respond to the health needs of our communities within a global perspective.
2. Provide an educational setting with balanced efforts among academic offerings, clinical services, and research endeavors.
3. Establish a system of continuous improvement in our programs to ensure their relevance and applicability.
4. Develop highly trained health professionals prepared to serve individuals and groups from diverse cultural, social and economical backgrounds.
5. Develop health professionals with high humanistic values.
6. Integrate technology in all of our administrative, academic, research and clinical activities.
7. Facilitate transference of scientific knowledge to the practice of the health professions.
8. Establish national and international alliances for faculty development, exchange of resources, and student exchange programs.
9. Foster a high degree of professionalism as health care providers within an interdisciplinary perspective.
10. Establish innovative programs prepared with the collaboration of community stakeholders, students, patients and accreditation agencies.
11. Promote an evidence-based practice setting.
12. Utilize service learning as the primary educational methodology for all academic programs.

## SPECIALIZED ACCREDITATIONS



### Speech-Language Pathology

Accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2200 Research Boulevard #310, Rockville, Maryland 20850, 800-498-2071 or 301-296-5700.



### Nutrition and Dietetics

Accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) from the Academy of Nutrition and Dietetics. 120 South Riverside Plaza, Suite 2000 Chicago, Illinois 60606-6995.

### Council on Naturopathic Medical Education (CNME)

#### Naturopathic Medicine

Authorized for a candidacy evaluation site visit by the Council on Naturopathic Medical Education (CNME). PO Box 178, Great Barrington, MA 01230.



### Technology Veterinary

Initial accreditation by the AVMA Committee on Veterinary Technician Education and Activities (CVTEA) since 2018 (Main Campus)

## FACULTY

**Alexandra García** / Assistant Professor DNP, University of Northe

**Andres G. Ocasio Negrón** / Instructor BS, Universidad de Puerto Rico

**Angel L. Rivera** / Assistant Professor MD, Universidad de Puerto Rico

**Aryselis Figueroa** / Assistant Professor ND, Southwest College of Naturopathic Medicine

**Awilda Rosa Morales** / Assisat Professor EdD, Universidad del Turabo

**Charmaine Alfonso** / Lecturer EdD, MS-RD Universidad Interamericana de Puerto Rico

**Cynthia Hernández Aponte** / Instructor MSN, Caribbean University

**Fernando Janer Sanchez** / Assistant Professor ND, Canadian College of Naturopathic Medicine

**Frank Valentín Silva** / Assistant Professor MD, Universidad Autónoma de Guadalajara

**Gianna E. Crisson-Cancel** / Instructor MS-CCC-SLP, Universidad de Puerto Rico

**Grisel Rodriguez** / Instructor DrPH, Ponce Health Sciences University

**Héctor Osuna León** / Instructor MS, Universidad de Puerto Rico

**Iris D. Pérez Rosado** / Instructor MSN, Universidad de Puerto Rico Recinto de Ciencias Médicas

**Jayson Algorri Mulero** / Instructor MSN, Columbia Central University

**José A. Gutierrez Rolón** / Instructor MSN, Dewey University

**Josué Pacheco Castillo** / Assistant Professor Ed.D, Universidad Interamericana de Puerto Rico

**Julio Cabán**/ Assistant Professor MVZ, Universidad Nacional Autónoma de México

**Kelli Killingsworth** / Instructor MPH, Universidad de Puerto Rico

**Keyla B Garcia Crescioni** / Assistant Professor PhD, Universidad de Puerto Rico

**Keyla N. Crespo Llado** / Instructor MEd, Universidad Interamericana

**Krystal Domínguez** / Instructor BS, Universidad de Puerto Rico

**Lacybeth Figueroa Ferreira** / Instructor MPHED, LND, Universidad del Turabo

**Laudinely Gippson Reyes** / Instructor MSN, Columbia Central University

**Leneika Vera**/ Instructor MS, Michigan University

**Lillian R. Pintado** / Associate Professor AuD-CCC-A, Salus University

**Lilliana R. Ríos Matos** / Assistant Professor SLPD, CCC-SLP, Nova Southeastern University

**Luisa M. Ramírez Flores** / Instructor MS, CCC-SLP, Universidad del Turabo

**Lushana M. Rosario de León** / Instructor MS, CCC-SLP, Universidad de Puerto Rico

**Lucila López Laboy** / Instructor BS, Universidad de Puerto Rico

**Luz P. García** / Instructor MS-CCCC-SLP, Universidad de Puerto Rico

**Maribel González** / Assistant Professor DHSC, MS-CCC-SLP, AT Still University

**Milagros Rodríguez Pagán** / Instructor MSN, National Univerity College

**Mildred Negrón** / Assistant Professor DNP, FNP-BC, Chatham University

**Minerva Mulero** / Associate Professor EdD, Pontificia Universidad Católica de Puerto Rico

**Nydia Bou** / Professor EdD, Universidad Interamericana de Puerto Rico

**Patricia Pabón**/ Assistant Professor DVM, Ross University

**Piyali Bhattacharya** / Associate Professor PhD, Jadavpur University of Calcutta, India

**Rosalyn Vega** / Instructor MSN, Universidad Metropolitana

**Shaiana Negrón Pagán** / Assistant Professor DVM, Ross University

**Sherley T. Cotto** / Instructor MSN, Columbia Central University

**Susana Rosa Rivera** / Instructor FNP, Universidad del Turabo

**Tania Maldonado Mena** / Assistant Professor DVM, Universidad Nacional Pedro Henríquez Ureña **PROGRAMS OF STUDY**

#### ASSOCIATE DEGREE IN VETERINARY TECHNOLOGY

Graduates of the program will be able to work as veterinary technicians to serve small and large animal hospitals, clinics, research facilities, educational institutions, animal shelters, and commercial, police and military facilities,. Our program emphasizes the development of professional and ethical attitudes, as well as interpersonal skills that should have all health professionals.

<b>Total Credits</b>	<b>64</b>	
<b>General Education Courses</b>	<b>15</b>	
<b>Core Courses</b>	<b>11</b>	
<b>Concentration Courses</b>	<b>38</b>	
<b>General Education Courses</b>	<b>(15 credits)</b>	
FSHS 105	Freshman Seminar	3
BIOL 107	Biology Science for Veterinary Students	3
ENGL 152	Fundamentals of Reading and Writing	3
SPAN 152	Fundamentals of Reading and Writing	3
MATH 120	Introductory Algebra	3
<b>Core Courses</b>	<b>(11 credits)</b>	

BIOL 300	Microbiology Health Sciences	3
BIOL 300L	Microbiology Lab	1
PSYC 123	Survey Course in Psychology	3 CHEM
224	Fundamentals of General Chemistry	3 CHEM
224L	Fundamentals of General Chemistry Lab	1

**Concentration Courses (38 credits)**

AVET 110	Introduction to Veterinary Sciences	3
AVET 120	Anatomy and Physiology of Domestic Animals	4
AVET 120L	Anatomy and Physiology of Domestic Animals Lab	0
AVET 130	Veterinary Nursing	3
AVET 221	Common Diseases and Parasitology in Domestic Animals	4
AVET 230	Techniques and Protocols of Veterinary Technology I	3
AVET 230L	Techniques and Protocols of Veterinary Technology I Lab	0
AVET 231	Techniques and Protocols of Veterinary Technology II	3
AVET 231L	Techniques and Protocols of Veterinary Technology II Lab	3
AVET 240	Animal Pharmacology and Toxicology	3
AVET 245	Basic Radiology in Domestic Animals	3
AVET 245L	Basic Radiology in Domestic Animals Lab	0
AVET 260	Management, Practice and Farm Animal Disease	3
BVET 400	Clinical Practice I	3
BVET 410	Clinical Practice II	3
BVET 390	Integrative Seminar	3

**ASSOCIATE DEGREE IN NURSING SCIENCES**

The nursing professional is qualified to practice clinical interventions at primary, secondary and tertiary to the individual in health and disease. Is responsible for providing health services to demonstrate knowledge of high quality, flexibility, confidence and leadership to the community it serves.

**Total Credits 72**

**General Education Courses 19**

**Core Courses 15**

**Concentration Courses 38**

**General Education Courses (19 credits)**

CHEM 224	Fundamentals of General Chemistry	3
CHEM 224L	Fundamentals of General Chemistry Lab	1
ENGL 152	Fundamentals of Reading and Writing	3
FSHS 105	Freshman Seminar	3
MATH 120	Introductory Algebra	3
PSYC 123	Psychology Survey	3
SPAN 152	Fundamentals of Reading and Writing	3

**Core Courses (15 credits)**

BIOL 103	Survey of Biological Sciences	3
BIOL 300	Microbiology	3
BIOL 300L	Microbiology Lab	1
BIOL 303	Human Biology I	3
BIOL 303L	Human Biology I Lab	1
BIOL 304	Human Biology II	3
BIOL 304L	Human Biology II Lab	1

**Concentration Courses (38 credits)**

NURS 201	Fundamentals of Nursing	4
NURS 201L	Fundamentals of Nursing Practice	2
NURS 203	Pharmacology	3
NURS 203L	Pharmacology Laboratory	1
NURS 303	Medical Surgical Nursing I	3
NURS 303L	Medical Surgical Nursing Practice I	2
NURS 304	Maternal & Child Nursing	3
NURS 304L	Maternal & Child Nursing Practice	2
NURS 305	Nursing Care of Children and Adolescents	3
NURS 305L	Nursing Care of Children and Adolescents Practice	2
NURS 306	Medical Surgical Nursing II	3
NURS 306L	Medical Surgical Nursing Practice II	2
NURS 404	Mental Health Nursing	5
NURS 404L	Mental Health Nursing Practice	0
NURS 407	Knowledge Integration in Nursing	3

**BACHELOR'S DEGREE IN FOOD AND NUTRITION MANAGEMENT**

Upon completion of this innovative program, graduates will have acquired knowledge of nutrition concepts and leadership, managerial and entrepreneurship skills to compete in the work force in the food service sector or other nutrition related programs. Graduates will have a wide range of career opportunities such as food service managers or directors at hospitals, long term care facilities, schools, and corporate food service operations. Other opportunities include catering management, food marketing, distribution, and nutrition related programs in the private or public sector.

## Objectives

1. Provide students with the opportunity to demonstrate knowledge of nutritional concepts to promote health and wellness among the general population.
2. Implement strategies to effectively manage and improve food service operations.
3. Develop managerial and entrepreneurship skills for successful self-employment.
4. Demonstrate knowledge of proper food procurement in large quantities including sustainable and safe practices.

## CURRICULUM

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>45</b>
<b>Core Courses</b>	<b>25 Major Courses 44 Elective Courses 6</b>

### General Education Courses (45 credits)

BIOL 103	Survey of Biological Sciences	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
FSHS 105	Freshman Seminar	3
HIST 253	History of Puerto Rico (Compendium)	3
HUMA 111	Civilizations & Universal Culture I	3
MATH 120	Introductory Algebra	3
PSYC 123	Survey Course in Psychology	3
SOSC 111	Individual, Community, Government I	3
SOSC 112	Individual, Community, Government II	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

### Core Courses (25 credits)

BIOL 303	Human Biology I	3
BIOL 303L	Human Biology I Lab	1
BIOL 304	Human Biology II	3
BIOL 304L	Human Biology II Lab	1
BIOL 301	Food Microbiology	3
BIOL 350	Biochemistry	3
CHEM 224	Fundamentals of General Chemistry	3
CHEM 224L	Fundamentals of General Chemistry Lab	1
CHEM 225	Fundamentals of Organic Chemistry	3
CHEM 225L	Fundamentals of Organic Chemistry Lab	1 HESC
360	Statistics Applied to Health Sciences	3

### Major Courses (44 credits)

NUTR 201	Introductory Nutrition	4
----------	------------------------	---

NUTR 202	Food Science	3
NUTR 202L	Food Service Lab	1
NUTR 305	Sociocultural Aspects in Nutrition	2
NUTR 310	Food Service System Management	4
NUTR 320	Foodservice Facility Design and	
NUTR 420	Nutritional Assessment	3
NUTR 430	Senior Professional Development Seminar	3
NUTR 460	Purchasing and Preparation of	
	Quantity Food Service	3
NUTR 460L	Purchasing and Preparation of Quantity Food Service	3
ACCO 109	Basic Accounting for Non-accountants I	3
ACCO 110	Basic Accounting for Non-accountants II	3
MARK 133	Principles of Marketing	3
MANA 213	Human Resources Administration	3
MANA 230	Organizational Behavior	3

### Elective Course (6 credits) BACHELOR'S DEGREE IN NURSING SCIENCES

This innovative nursing program with emphasis on community health promotion and interventions is the first program offered by the School of Health Sciences. It was especially designed for qualified students and registered nurses who aim to possess a bachelor's degree in nursing. Our graduates will be able to perform their professional nurse generalist role as providers of health care services in primary, secondary and tertiary settings.

Our students have the opportunity to practice in hospital and community settings within an interdisciplinary environment. Innovations and new technological advances are integrated into the training of future nurses according to the new skills and roles for holistic care. Our nursing program expects to provide the leadership and vision required for nursing in the 21st Century.

### Objectives:

The students in the bachelor's degree program in nursing sciences will:

1. Apply knowledge in global health care systems and policies and in-depth knowledge of health promotion, risk reduction and disease prevention.
2. Integrate didactic and clinical experiences on illness and disease management to recognize the importance of professional ethics.

3. Develop informatics and health care technologies skills.
4. Practice altruism and autonomy respect cultural differences and human diversity.
5. Demonstrate respect for human dignity recognize the value of integrity and social justice.
6. Advocate for professional standards and political processes.
7. Develop critical Thinking and problem solving skills when practicing various Nursing roles.
8. Practice effective written and verbal communication skills.
9. Acquire Technical skills essential to offer excellent Nursing care based in evidence.

### CURRICULUM

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>37</b>
<b>Core Courses</b>	<b>21</b>
<b>Concentration Courses</b>	<b>59</b>
<b>Elective Courses</b>	<b>6</b>
<b>General Education Courses (37 credits)</b>	
CHEM 224 Fundamentals of General Chemistry	3
CHEM 224L Fundamentals of General Chemistry Lab	1
ENGL 152 Fundamentals of Reading and Writing	3
ENGL 153 Advanced Communicative English	3
ENGL 231 Research and Writing	3
FSHS 105 Freshman Seminar	3
HUMA 111 Civilizations & Universal Culture I	3
MATH 120 Introductory Algebra	3
PSYC 123 Survey Course in Psychology	3
SOSC 111 Individual, Community, Government and Social Responsibility I	3
SOSC 112 Individual, Community, Government and Social Responsibility II	3
SPAN 152 Fundamentals of Reading and Writing	3
SPAN 250 Writing Techniques	3
<b>Core Courses (21 credits)</b>	
HESC 360 Statistics Applied to the Health Sciences	3
HESC 365 Health Sciences Research	3
BIOL 103 Survey of Biological Sciences	3
BIOL 300 Microbiology	3
BIOL 300L Microbiology Lab	1
BIOL 303 Human Biology I	3
BIOL 303L Human Biology I Lab	1
BIOL 304 Human Biology II	3
BIOL 304L Human Biology II Lab	1
<b>Major Courses (59 credits)</b>	
NURS 201 Fundamentals of Nursing	4

NURS 201L Fundamentals of Nursing Practice	2
NURS 202 Health and Physical Assessment	3
NURS 202L Health and Physical Assessment Laboratory	2
NURS 203 Pharmacology	3
NURS 203L Pharmacology Laboratory	1
NURS 210 Nursing Informatics	3
NURS 303 Medical and Surgical Nursing I	3
NURS 303L Medical and Surgical Nursing Practice I	2
NURS 304 Maternal and Child Nursing	3
NURS 304L Maternal and Child Nursing Practice	2
NURS 305 Nursing Care of Children and Adolescents	3
NURS 305L Nursing Care of Children and Adolescents Practice	2
NURS 306 Medical and Surgical Nursing II	3
NURS 306L Medical and Surgical Nursing Practice II	2
NURS 403 Community Health Nursing	3
NURS 403L Community Health Nursing Practice	2
NURS 404 Mental Health Nursing	3
NURS 404L Mental Health Nursing Practice	2
NURS 405 Nursing Leadership	3
NURS 406 Nursing Seminar	3
NURS 406L Nursing Practicum	2
NURS 407 Knowledge Integration in Nursing	3

### Elective Courses (6 credits)

#### Select from these courses

HESC 370 Transcultural Nursing	3
NURS 209 Nutrition Essentials for Nursing Practice	3
NURS 212 Nursing Care of Older Adults	3
HESC 350 Reconceptualizing Aging	3
NURS 424 Principles of Palliative and Endo of Life Nursing Care	3
NURS 205 Pathophysiology	3

### BACHELOR'S DEGREE IN NUTRITION AND DIETETICS

In response to the great need in Puerto Rico for professionals in the area of nutrition and dietetics, the School of Health Sciences at Universidad Ana G. Méndez Recinto de Gurabo provides an integrated education through an undergraduate academic offering of a bachelor of science degree in nutrition and dietetics.

The Coordinated Program in Dietetics (CPD) provides the required nutrition and dietetics coursework and more than 1,200 hours of supervised practice within an academic program leading to a bachelor's degree. Graduates who successfully complete all course and supervised practice requirements will be eligible to take the national exam to become a Registered Dietitian as well as the Puerto Rico Board Exam.

## Objectives

1. Prepare competent entry-level dietitians who can work in a variety of settings.
2. Develop professional dietitians committed to community service and interdisciplinary work.
3. Develop professionals capable of participating in nutrition and dietetic research-related activities.

## Practice Settings

Students will be placed in a variety of supervised practice settings throughout the Island of Puerto Rico. Rotation placements are not limited to the geographic region surrounding Gurabo. Students are responsible for all costs related to the supervised practice including but not limited to medical examinations and vaccines, proof of medical insurance, housing and transportation.

## CURRICULUM

<b>Total Credits</b>	<b>132</b>
<b>General Education Courses</b>	<b>36</b>
<b>Core Courses</b> <b>25 Major Courses</b>	<b>68</b>
<b>Courses</b> <b>3</b>	<b>Elective</b>
<b>Supervised Practice Experiences</b>	<b>900 hours</b>

### General Education Courses (36 credits)

BIOL 103	Survey of Biological Sciences	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
FSHS 105	Freshman Seminar	3
HIST 253	History of Puerto Rico (Compendium)	3
HUMA 111	Civilizations & Universal Culture I	3
MATH 120	Introductory Algebra	3
PSYC 123	Survey Course in Psychology	3
SOSC 111	Individual, Community, Government	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3

### Core Courses (25 credits)

BIOL 303	Human Biology I	3
BIOL 303L	Human Biology I Lab	1
BIOL 304	Human Biology II	3
BIOL 304L	Human Biology II Lab	1
BIOL 301	Food Microbiology	3
BIOL 350	Biochemistry	3
CHEM 224	Fundamentals of General Chemistry	3
CHEM 224L	Fundamentals of General Chemistry Lab	1

CHEM 225	Fundamentals of Organic Chemistry	3
CHEM 225L	Fundamentals of Organic Chemistry Lab	1
HESC 360	Statistics Applied to Health Sciences	3

### Major Courses (68 credits)

NUTR 201	Introductory Nutrition	4
NUTR 202	Food Science	3
NUTR 202L	Food Service Lab	1
NUTR 204	Vegetarian Nutrition	3
NUTR 205	Nutrition for Sport and Exercise	2
NUTR 206	Nutrition in Alternative and Complementary Medicine	2
NUTR 305	Sociocultural Aspects in Nutrition	2
NUTR 310	Food Service System Management	4
NUTR 320	Foodservice Facility Design and Equipment	3
NUTR 321	Institutional Menu Planning	3
NUTR 321L	Institutional Menu Planning Lab	1
NUTR 403	Advanced Nutrition and Metabolism	3
NUTR 405	Nutrition Throughout the Life Cycle	3
NUTR 420	Nutritional Assessment	3
NUTR 425	Community Nutrition	3
NUTR 435	Educational Strategies in Nutrition	3
NUTR 436	Food Service Practice Experience	3
NUTR 440	Medical Nutrition Therapy I	4
NUTR 441	Medical Nutrition Therapy II	4
NUTR 442	Medical Nutrition Therapy Practice Experience	3
NUTR 450	Community Practice Experience	3
NUTR 451	Nutritional Research Methods	2
NUTR 455	Integration Seminar and Fundamentals of Nutrition-Dietetics Profession	3
NUTR 460	Purchasing and Preparation of Quantity Food Service	3

### Elective Course (3 credits)

#### BACHELOR'S DEGREE IN SPEECH LANGUAGE THERAPY

Our goal is to prepare speech-language therapy professionals with the knowledge, skills, and attitudes that are necessary to serve as therapists in the areas of counseling, prevention, and intervention of persons with communication impairments. The teaching/training process will be characterized by ample participation in the clinical processes, freedom to question and express ideas, and the principle of liberty of individuals' rights.

## Objectives

The Program will accommodate for students' needs, interests, and abilities to accomplish the following objectives:

1. Contribute to the expansion of health services programs to respond the needs of Puerto Rican society.
2. Prepare students in the area of speech-language therapy to serve the needs of children and youths with speech, language, and hearing impairments.
3. Prepare a graduate to work effectively with other health team professionals for the well being of handicapped children and youths.
4. Promote a humanistic view in the provision of speechlanguage therapy services.
5. Promote among students the search for truth through the intense and scientific analysis of facts or of circumstances they will encounter in their professional life.
6. Prepare a graduate skilled in the use of technology as a therapeutic tool through a practice-clinic learning experience.

## CURRICULUM

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>45</b>
<b>Core Courses</b>	<b>6 Major Courses 63</b>
<b>Elective Courses</b>	<b>6</b>
<b>General Education Courses</b>	<b>(45 credits)</b>
BIOL 103 Survey of Biological Sciences	3
BIOL 200 Principles of Human Anatomy	3
ENGL 152 Fundamentals of Reading and Writing	3
ENGL 153 Advanced Communicative English	3
ENGL 331 Oral Communication	3
FSHS 105 Freshman Seminar	3
HIST 253 History of Puerto Rico (Compendium)	3
HUMA 111 Civilizations & Universal Culture I	3 HUMA
112 Civilizations & Universal Culture II	3
MATH 120 Introductory Algebra	3
SOSC 111 Individual, Community, Government & Social Responsibility I	3
SOSC 112 Individual, Community, Government & Social Responsibility II	3
SPAN 152 Fundamentals of Reading and Writing	3
SPAN 230 Introduction to Linguistics I	3
SPAN 250 Writing Techniques	3
<b>Core Courses</b>	<b>(6 credits)</b>
HESC 360 Statistics in Health Sciences 3	HESC 365 Health Sciences Research 3

## Major Courses (63 credits)

EDUC 171	Human Growth Development and Learning	3
PSHC 101	Physical Sciences I	3
SIGN 101	Visual-Gestural and Body Language Communication Techniques	3
SPED 315	Teaching Exceptional Children	3
SPTH 353	Phonetics	3
SPTH 202	Introduction to Professions in Communication Sciences and Disorders	3
SPTH 205	Anatomy and Physiology of Speech and Language	3
SPTH 355	Articulation and Phonological Development and Intervention	3
SPTH 255	Language Development	3
SPTH 257	Introduction to Audiology and Aural Rehabilitation	3
SPTH 406	Language Disorders	3
SPTH 402	Treatment in CSD: Basic Concepts, Legal and Ethical Aspects	3
SPTH 404	Treatment in CSD: Related and Severe Conditions	3
SPTH 357	Early Intervention	3
SPTH 375	Fluency	3
SPTH 310	Technology in CSD	3
SPTH 395	Voice	3
SPTH 300	Speech and Hearing Sciences	3
SPTH 440	Knowledge Integration in Speech-Language Therapy	3
SPTH 450	Clinical Practice I	3
SPTH 451	Clinical Practice II	3

## Elective Courses (6 credits)

## BACHELOR'S DEGREE IN VETERINARY TECHNOLOGY

Graduates will apply knowledge and skills to the care and handling of small and large animals during clinical laboratory procedures, the management of illness, animal nutrition, pharmacology, parasitology, anesthesia and medical and surgical assistance of animals and to the prevention of diseases, hygiene, and cleanliness of the work area and to the management of a veterinary facility. Graduates of the program will be able to work as veterinary technologists with animals in veterinary hospitals, clinics, research facilities at the industry or the academy, at educational institutions, animal shelters, sanctuaries and commercial, police, and military facilities among other settings.

### Objectives

1. Train in the student with the competences and methodologies to serve as a professional liaison between veterinarians, scientists and biomedical researchers and their clients.
2. Provide the student with the skills that guarantee an effective response in the support tasks that will be carried out as part of their professional responsibilities.
3. Provide the student with all the techniques, knowledge and experience to perform as a veterinary technologist in a variety of work settings.
4. Develop in the student the understanding of the managerial and organizational environment that frames the veterinary services.

## CURRICULUM

<b>Total Credits</b>	<b>119</b>
<b>General Education Courses</b>	<b>33</b>
<b>Core Courses    30 Major Courses</b>	<b>56</b>

### General Education Courses (33 credits)

FSHS 105	Freshman Seminar	3
BIOL 107	Biology Science for Veterinary Students	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
HUMA 111	Civilizations & Universal Culture I	3
MATH 120	Introductory Algebra 3 PSYC 123 Survey Course in Psychology 3 SOSC 111 Individual, Community, Government I 3 SPAN 152 Fundamentals of Reading and Writing 3	
SPAN 250	Writing Techniques	3

### Core Courses (31 credits)

BIOL 300	Microbiology	3
BIOL 300L	Microbiology Lab	1
CHEM 224	Fundamentals of General	

	Chemistry	3
CHEM 224L	Fundamentals of General Chemistry Lab	1
CHEM 225	Fundamentals of Organic Chemistry	
3 CHEM 225L	Fundamentals of Organic Chemistry Lab	1
PHSC 101	General Physics 3 MATH 121 Intermediate Algebra	
3 MATH 121L	Intermediate Algebra Lab 0	
MATH 151	College Algebra 4 MATH 151 L College Algebra Lab 0	
MATH 152	Trigonometry and Analytical Geometry	
4 MATH 152L	Trigonometry and Analytical Geometry Lab	0
MATH 221	Calculus	4
MATH 221 L	Calculus Lab	0

### Major Courses (56 credits)

AVET 110	Introduction to Veterinary Sciences	
3 AVET 120	Anatomy and Physiology of Domestic Animals	4
AVET 120 L	Anatomy and Physiology of Domestic Animals Lab	0
AVET 130	Veterinary Nursing	3
AVET 221	Common Diseases and Parasitology in Domestic Animals	4
AVET 230	Techniques and Protocols of Veterinary Technology I	3
AVET 230 L	Techniques and Protocols of Veterinary Technology I Lab	0
AVET 231	Techniques and Protocols of Veterinary Technology II	3
AVET 231 L	Techniques and Protocols of Veterinary Technology II Lab	0
AVET 240	Animal Pharmacology and Toxicology	
3 AVET 245	Basic Radiology in Domestic Animals	
3 AVET 245 L	Basic Radiology in Domestic Animals Laboratory	0
AVET 260	Management, Practice and Farm Animal Disease	3
BVET 310	Veterinary Anesthesia and Surgical Assisting	3
BVET 310L	Veterinary Anesthesia and Surgical Assisting Lab	0
BVET 350	Veterinary Dentistry for Veterinary Technicians	3
BVET 350L	Veterinary Dentistry Laboratory for	

	Veterinary Technicians	0		Fundamentals	3
BVET 360	Animal Nutrition	3	BVET 380	Critical Care and Veterinary Emergency	
BVET 370	Veterinary Office Management			Fundamentals	3
			BVET 380L	Critical Care and Veterinary Emergency	
				Fundamentals Lab	0
			BVET 385	Veterinary Nursing in Alternative	
				Medicine	3
			BVET 390	Integrative Seminar	3
			BVET 400	Clinical Practice I	3
			BVET 410	Clinical Practice II	3

## COURSE DESCRIPTIONS

(Courses marked with @ could be offered in both modalities, traditional or on-line.)

### AVET 101

#### Veterinary Math

##### Three Credits

Review of basic math concepts that are carried out daily in the practice of the profession. The concepts of ratio and proportion, estimation and significant figures, as well as the method for augmentation and reduction of formulas, preparations, expressed to the percent, dilution and concentration are discussed. Emphasis on the International System of Units, the English System and equivalents that are used to convert between them. Basic mathematical operations are performed and their application to quantitative problem solving as part of the professional roles for the veterinary technician.

### AVET 110

#### Introduction to Veterinary Sciences

##### Three Credits

In this course the roles and responsibilities of the veterinary technician and alternatives of study, work and professional organizations are described. It includes safety rules, ethics and laws that apply in the exercise of their profession and animal welfare in Puerto Rico. Also in this course medical terms and basics of the management of the veterinary hospital and veterinary clinics, as well as communication with clients and colleagues are described. Major breeds of domestic animals are identified and concepts of behavior, restraint, and security are defined. In addition, basic physical examination techniques, sampling and vaccination protocols are demonstrated.

### AVET 120

#### Anatomy and Physiology of Domestic Animals

##### Four Credits

Histological, anatomical, and physiological study of the skeletal, muscular, epithelial, respiratory, cardiovascular, urinary, endocrine, nervous and immune systems. Emphasizes in the interrelation between the systems for normal body functioning. Studies the terminology related to anatomy and animal physiology. The course is modeled after the dog and compared with other domestic animals using skeletons, models, audiovisual dissection specimens and laboratory experiences.

### AVET 120L

#### Anatomy and Physiology of Domestic Animals

### Laboratory

#### Four Credits

Practical application of the concepts developed in the AVET 120 course. Anatomy and Physiology of Domestic Animals Laboratory is based on the study of comparative anatomy, using canine anatomy as a basis for comparison of anatomy of other animals. Live animals, small animal carcasses and preserved specimens will be used for the practice and teaching. The use and application of veterinary anatomical and physiological terms is emphasized.

### AVET 130

#### Veterinary Nursing

##### Three Credits

Course that covers the care of small and large animals, of all ages, sick or healthy, in all the contexts and includes health promotion, disease prevention and care for sick animals. Issues related to medical and surgical nursing of small animals, equine and food animals are discussed.

### AVET 221

#### Common Diseases and Parasitology in Domestic

#### Animals

##### Three Credits

This course exposes students to the pathophysiological processes of common infectious and non-infectious diseases. Relates the respective clinical symptoms with the main forms of diagnosis and therapy in large clinical scenarios. It will focus on practical concepts of immunity and prevention of infectious diseases in domestic animals, besides familiarizing students with the prevention and diagnosis of zoonotic diseases. A systematic study of the morphology, lifecycles and epidemiology of the main parasites, with emphasis on those affecting domestic and food animals is also presented.

### AVET 230

#### Techniques and Protocols of Veterinary Technology I

##### Three Credits

The course presents the clinical laboratory techniques and procedures commonly use on hematology, urinalysis, clinical chemistry and veterinary cytology. It emphasizes the techniques and methods, rather than its interpretation. In addition, it reviews and summaries the quality control systems and the laboratory instrumentation needed for the analysis of clinical chemistries and hematology. Possible errors in the sample taking and handling that might complicate the interpretation of laboratory data are discussed. Anemia diagnostic tests and its treatment; as well as methods and tests for pregnancy diagnosis and ocular diagnostic test (including tonometry, fluorescein stains and tear production tests- Schirmer tear test) are discussed, too.

**AVET 230L****Techniques and Protocols of Veterinary Technology****Laboratory I****Three Credits**

Practical application of the concepts developed in the AVET 230 course. The course presents the techniques and clinical laboratory procedures commonly used in hematology, urinalysis, clinical chemistry and veterinary cytology. Techniques and methods for the evaluation of samples are emphasized, and analysis of results interpretation. Quality control systems and laboratory instrumentation required for the analysis of clinical chemistry and hematology are summarized and reviewed. Possible errors in the taking and handling of samples that may complicate the interpretation of laboratory data are discussed. Also, pregnancy and ocular diagnostic tests are presented (including tonometry, fluorescein staining, and tear production test - Schirmer tear test).

**AVET 231****Techniques and Protocols of Veterinary Technology II****Three Credits**

Course with a broad content in which issues related to neonatal and geriatric pet care, emergency nursing, anesthesia and toxicology protocols are discussed. A broad view of issues relating to euthanasia and necropsy is also presented. In addition, the handling of exotic species and small mammals is reviewed and emphasis is made on the study of laboratory animal diseases and medicine.

**AVET 231L****Techniques and Protocols of Veterinary Technology****Laboratory II****Three Credits**

Practical application of the concepts developed in the AVET 231 course. Discussion and application of techniques and protocols for medical emergencies, poisonings, intensive care, and basic necropsy techniques and procedures. Presentation and demonstration of effective and safe patient management in all phases of anesthetic procedures, including the handling of laboratory animals, exotic birds, and small mammals. Integration of simulators and live and dead animals to enhance the ability and skill in veterinary technology techniques.

**AVET 240****Animal Pharmacology and Toxicology****Three Credits**

This course provides students the opportunity to develop critical thinking concepts related to pharmacology applied to veterinary medicine. Describes the pharmacological principles of prescription drugs in the field of veterinary medicine. Students will understand the veterinary products and the latest

drug developments. Trains the student in the various techniques of drug administration and dosage for patients in veterinary care.

**AVET 245****Basic Radiology in Domestic Animals****Three Credits**

This course relates the student with the basics of radiological sciences and their usefulness in the field of veterinary medicine. The students become related to terminology and develop the skills to produce a diagnostic quality radiographic image. Radiation safety topics are discussed.

**AVET 245L****Basic Radiology in Domestic Animals Laboratory****Three Credits**

Practical application of the concepts developed in the AVET 245 course. This course relates the student with the basic concepts of the radiological sciences and their usefulness in the field of veterinary medicine. The student will develop the skills needed to produce a diagnostic quality radiographic image and will apply the recommended radiation safety rules.

**AVET 250****Grooming and Veterinary Psychology****Three Credits**

Description of the domestic animal characteristics and their respective grooming styles for the most common breeds. Discussion of the different ways of categorizing domestic animals (size, colour, characteristics, coat type). Review of grooming subjects including equipment, techniques, cares, preparation, bath, drying and clipping.

**AVET 260****Management, Practice and Farm Animal Disease****Three Credits**

This course discusses the husbandry of farm animals including breeds, behavior, reproduction, nutrition and restraint. It discusses the best practices for proper management of farm animals. Demonstrates medical and surgical nursing for large species. It also discusses techniques in necropsy, dentistry and assisted reproduction for farm animals.

**BVET 310****Veterinary Anesthesiology and Surgical Assisting****Three Credits**

The course will focus on the clinical skills necessary for safe and effective anesthesia and surgery of companion animal patients (dogs and cats). Discussion about intravenous catheter placement, proper endotracheal intubation, patient and surgical site preparation, and patient monitoring under

general anesthesia. Also, will be covered the use and side effects of sedatives, analgesics and anesthetics.

#### **BVET 310L**

##### **Veterinary Anesthesiology and Surgical Assisting**

###### **Laboratory**

###### **Three Credits**

Practical course in which the concepts related to the clinical skills needed for the safe and effective administration of anesthesia on companion animals (dogs and cats) surgery are applied. Emphasis is made on the identification and use of general and orthopedic surgery instruments and components of the anesthesia machine, intravenous catheterization, surgery room, staff and patient preparation, and assistance in the performing of common surgical procedures in a small animal veterinary clinic. This course will represent 25% of the BVET 310 course grade, which will be taken concurrently.

#### **BVET 350**

##### **Veterinary Dentistry for Veterinary Technicians**

###### **Three Credits**

Study of dental anatomy, common dental disease, basic dental procedures and equipment and instruments most used as part of the veterinary dentistry for veterinary technicians. Topics will include dental charting, routine periodontal care, anesthesia, patient monitoring, analgesia, post-operating cares, and home care.

#### **BVET 350L**

##### **Veterinary Dentistry Laboratory for Veterinary**

###### **Technicians**

###### **Three Credits**

Practical course in which are applied the concepts related to the role of the veterinary technologist in the handling of veterinary dentistry cases. Emphasis is made on the identification and maintenance of commonly used dental instruments and equipment, the monitoring of the anesthetized patient and the performance of common dental procedures in veterinary practice. This course will represent 25% of the BVET 350 course grade, which will be taken concurrently.

#### **BVET 360**

##### **Animal Nutrition**

###### **Three Credits**

Discussion of basic concepts of animal nutrition and feeding. Topics included are: anatomy and physiology of digestive system in ruminants, avians, rabbits, equines and companion animals. It will be described the digestion, absorption and utilization of nutrients. In addition, the students will learn about problems caused by nutrient deficiencies and common metabolic disorders in animals.

Also will be discussed methods of feedstuff evaluation and formulation of basic rations for animals.

#### **BVET 370**

##### **Veterinary Office Management Fundamentals**

###### **Three Credits**

Study about the management of veterinary offices and veterinary service facilities. Emphasis is placed on office management and procedures, client relations, taking patient histories, medical records maintenance, pet nutrition and behavior counseling, medical emergency management, euthanasia and bereavement.

#### **BVET 380**

##### **Critical Care and Veterinary Emergency**

###### **Fundamentals**

###### **Three Credits**

Discussion of the theoretical and practical aspects of assisting the veterinarian in the management of medical and traumatic emergencies, the recognition and assessment of cardiovascular shock, respiratory crisis, gastrointestinal emergency, musculoskeletal trauma, the principles and techniques of fluid therapy and administration of emergency drugs. Also, this course presents themes related to the application of treatment protocols for shock, cardiopulmonary arrest, gastrointestinal crisis, wounds and fractures, toxicoses, and dystocia, as well as the nutrition of critical care patients, and maintenance of emergency medical equipment and supplies.

#### **BVET 380L**

##### **Critical Care and Veterinary Emergency**

###### **Fundamentals Laboratory**

###### **Three Credits**

Practical course in which the concepts related to the management of medical and traumatic emergencies, the recognition and evaluation of cardiovascular shock, respiratory arrest, gastrointestinal emergencies, musculoskeletal traumas, principles and techniques of fluid therapy and emergency drug administration are applied. Emphasis is made on the identification and use of drugs, the required equipment and the techniques commonly used to handle a veterinary emergency. Anatomical models will be used to simulate some situations. This course will represent 25% of the BVET 380 course grade, which will be taken concurrently.

#### **BVET 385**

##### **Veterinary Nursing in Alternate Medicine**

###### **Three Credits**

Study of principles and basic concepts of veterinary nursing in the modalities of alternative medicine. Discussion of the following alternative and complementary modalities: herbal medicine, homeopathy, homotoxicology and flower essence, applied kinesiology and acupuncture. Also, the discussion will include physical modalities such as chiropractic, massage, rehabilitation and miscellaneous therapies, applied to veterinary nursing.

#### **BVET 390**

##### **Integrative Seminar**

##### **Three Credits**

Review of the content of the veterinary technician/technologist occupation related courses for integration of learning concepts. Discussion of the minimum skills required to practice in a variety of situations safely and effectively. Prepares students to take their professional board test.

#### **BVET 400**

##### **Clinical Practice I**

##### **Three Credits**

This course and lab integrate the acquired knowledge by placing students in practice ruled centers. Students will be working directly with a veterinarian and/or a licensed veterinary technologist, executing the procedures requested and needed to diagnose and treat small animals. Students will be monitored and evaluated in carrying out their duties as future veterinary technicians. The veterinarian and/or veterinary technologist will be serving as a supervisors, counselors and advisors. The clinical portion of the course will consist of a total of 120 hours.

#### **BVET 410**

##### **Clinical Practice II**

##### **Three Credits**

This course and lab integrate the knowledge acquired by placing students in practice ruled centers. Students will be working directly with a licensed veterinarian and/or veterinary technologist, executing the procedures requested and needed to diagnose and treat farm animals. They will be monitored and evaluated in carrying out their duties as future veterinary technicians/technologists. The veterinarian and/or veterinary technologist will be serving as supervisors, counselors and advisors. The clinical portion of the course will consist of a total of 120 hours.

#### **FSHS 105**

##### **Freshman Seminar in Health Sciences**

##### **Three Credits**

The course focuses on strengthening basic knowledge and skills at the personal, intellectual and technological level

necessary to succeed in academic activities, performance, and adjustment to university life. Each student will participate in mentorship activities that will continually build upon skills and knowledge base in the advancement of student development. Important emphasis is given to the integral development of humanistic fulfillment and academic success. Students are guided through a series of activities on the university campus, exposing them to services offered by the institution and the School of Health Sciences. The goal is to instill in students feelings of security and confidence in managing and solving personal and academic situations.

#### **HESC 340**

##### **Health Sciences Research**

##### **Three Credits**

This is a required core course for undergraduate students at the School of Health Sciences. Specific attention is given to the relationship between research outcomes and clinical practice. The course prepares students to analyze research literature in the health sciences critically. Students also have the opportunity to apply the scientific method to clinical research. Funding opportunities available to develop research studies in health sciences are presented and discussed.

#### **HESC 350**

##### **Reconceptualizing Aging**

##### **Three Credits**

This course is directed to undergraduate students who are interested in developing, strengthening and expanding their knowledge, attitudes and skills in the care of the older adult, and who also need to develop interdisciplinary work skills. The course is intended to serve as an elective for undergraduate programs in the health and behavioral sciences, which are disciplines that focus on the care and services to older adults, regardless of the clinical setting. These disciplines also, have direct contact with these older clients as a response to the nature of their professional services. Students will have the opportunity to clarify myths and stereotypes about aging, gain a new vision of the aging concept and become familiar with the socio-demographic profile of the elderly. The course also discusses social, biological and psychological changes in aging, their impact on services to the elderly and the uniqueness of older persons. The most prevalent conditions and problems that affect the functional status and fundamental concepts of interdisciplinary teamwork will be also addressed. Students will have the opportunity to interview older adults in the home setting to estimate their functional status and carry out perform interdisciplinary teamwork.

#### **HESC 360**

##### **Statistic Applied to Health Sciences**

##### **Three Credits**

This is the third required core course for all students completing BS studies at the School of Health Sciences, with the exception of students of Speech Language Therapy and Dietetics and Nutrition, who are encouraged to take the course as an elective. The course provides a discussion of statistical methods applied to the health professions. In this course students expand on the knowledge introduced in HESC 340, Health Sciences Research. Emphasis is placed on qualitative and quantitative statistical analyses applied to clinical research, according to different research designs.

**HESC 365 @  
Health Sciences Research  
Three Credits**

This core course is required for undergraduate students at the School of Health Sciences. Specific attention is given to the relationship between research outcomes and clinical practice. This course prepares students to analyze research literature in the health sciences critically. Students also have the opportunity to apply the scientific method to clinical research. Funding opportunities available to develop research studies in health sciences are presented and discussed.

**HESC 370  
Transcultural Nursing  
Three Credits**

This course is offered at the undergraduate level to apply a transcultural nursing framework to guide nursing practice in diverse health care settings across the lifespan. Considering that nursing care requires effective communication skills, as well as a clear understanding of the cultural beliefs and preferences of clients, students are introduced to the development of cultural assessment skills. These, combined with critical thinking and decision-making abilities based on cultural knowledge, will provide the necessary competence on which to base transcultural nursing care. Using this approach, nurses will be able to provide culturally competent and contextually relevant care for clients/individuals, families, groups, communities, and institutions.

**ICSE 360  
Services in the Natural Environment and the  
Inclusion in Child Care and Pre-School Centers  
Three Credits**

This course is oriented toward the development of competencies in the provision of services for infants and toddlers in their natural environment. The course includes discussions of the design and implementation of services for infants and toddlers, their families and caregivers through a relation of empowerment, capacitation and collaboration between the service provider, the family and the community.

**ICSE 380  
Facilitating the Participation, Learning and  
Development through Assistive Technology  
Three Credits**

This course is designed to provide students the of basic skills in the use of the assistive technology. Students will acquire skills in the development of activities and strategies to promote the provision of equipment, adaptations, modifications and services that encourage the active participation, learning and development of infants and toddlers in their natural environment.

**ICSE 390  
Family Centered Services, Assessment and Service  
Planning  
Three Credits**

The course centers on the recognition of the family as the major influence in the life of the infant/toddler. Emphasis is placed on strenghts and needs. Respect of differences are essentias components that will be discussed in this course. Students will knowledge in the course theories of family development, working with families and support strategies in the identification, implementation and evaluation of the outcomes.

**ICSE 400  
Practical Intervention Experience in the Field of  
Early Intervention  
Three Credits**

This course is designed for students to practice the skills learned in the courses taken previously. Students will complete 30 hours of practical field intervention experiences (10 hours per credit). They will be provided with field experiences in natural environments and opportunities to participate in the identification, assessment, planning and service processess.

**MSNT 540  
Nutritional Problems; a global perspective  
Three Credits**

The course will focus on nutrition issues and problems related to global health inequality. Students will explore the nature and extent of global inequalities, in health and nutrition, as well as the implications of the health crisis that afflicts countries, Special attention will be given to problems such as food habits, malnutrition and food security. Discussios of ways to improve health and wellbeing to reduce observed disparities will also be included.

**NURS 201**

## **Fundamentals of Nursing**

### **Four Credits**

This theoretical course provides an introduction to the historical, sociopolitical, and legal concepts of the nursing profession in the United States, Puerto Rico, and other hispanic communities. The student is guided to consider the individuals motivation in seeking health care and how their problems interfere with daily activities. Emphasis is placed on the client as a holistic being and the use of critical thinking when intervening in health and illness with a variety of individual's from different cultural and social backgrounds, and diverse age groups. The nursing process is discussed as a basic tool for patient care at different stages of growth and development.

## **NURS 201L**

### **Fundamentals of Nursing Practice**

#### **Two Credits**

This clinical course provides opportunities for the development of the necessary skills used in hospital and community settings to carry out the nursing role. Basic nursing skills such as communication, safety and infection control, vital signs, health, activity and rest among others apply. Emphasis is placed on the client as a holistic being and the use of critical thinking when intervening in health and illness with a variety of individual's from different cultural/social backgrounds, and different age groups. The course clinical component requires the student to complete 45 hours at skill laboratory and 45 hours of clinical practice in assigned clinical setting, for a total of 90 hours/term.

## **NURS 202**

### **Health and Physical Assessment**

#### **Three Credits**

This course focuses on the discussion and application of the nursing diagnosis process, the health assessment, referral process, and physical examination techniques. Skills and knowledge are developed in comprehensive health estimate through the life cycle. It focuses on the realization of the health and physical examination for health promotion and disease prevention. They apply the skills of communication, interview, health history assessment, physical exam techniques, instruments, and the role of nursing professionals during the health and physical examination.

## **NURS 202L**

### **Health and Physical Assessment**

#### **Two Credits**

In this course skills for comprehensive health assessment through the life cycle are developed. It focuses on the

realization of health assessment and physical examinations for health promotion and disease prevention.

Communication skills, interview, health history, exploration techniques, instruments, and the role of nurses during the health assessment and physical exam are applied. The student must complete 60 hours in the skill laboratory.

## **NURS 203**

### **Pharmacology**

#### **Three Credits**

This course presents students with the opportunity to develop knowledge related to pharmacology concepts and it's application to the nursing process. The content focuses on principles of pharmacology, drug classifications, administration routes, dosage calculation, therapeutic use, errors prevention, and cultural and ethical legal aspects. The student is also exposed to the basic concepts of nontraditional medicine and drug interactions.

## **NURS 203L**

### **Pharmacology Laboratory**

#### **One Credit**

This laboratory course offers the opportunity for the student to develop the skills for administering drugs through various routes of administration. The main purpose is to apply the skills dosing, taking medical orders, medication administration, and preparation of intravenous solutions. The nursing process is applied in drug delivery and patient safety in the laboratory skills. The student must complete 30 hours/term in the skills and simulation laboratory.

## **NURS 205**

### **Pathophysiology**

#### **Three Credits**

This course presents the basic concepts of human pathophysiology and explains the processes of specific diseases. The course is divided in two parts: the microsystem and the macrosystem. Part one reviews cellular responses to infection, environmental factors, genetics, diet, cancer, and stress. Part two is organized by body systems. Students are expected to have a basic knowledge of microbiology, chemistry, anatomy and physiology. Relevant case studies are discussed in class, and aspects such as risk factors pertinent to pediatrics, aging and women's health are presented.

## **NURS 209**

### **Nutrition Essentials for Nursing Practice**

#### **Three Credits**

This is a course offered to undergraduate nursing students (BSN) as an elective option. The course is designed to fill the need for clinical nutrition education for nursing students. It includes discussions of the fundamentals of nutritional care

including nutritional assessment, identifying risk factors, determining nutrient requirements, and selecting appropriate interventions. Life cycle nutrition, functional elements of nutrition support, trends in nutritional care, and nutritional considerations in specific disease states are also covered.

**NURS 210**  
**Nursing Informatics**  
**Three Credits**

This course provides an introduction to nursing informatics with the integration of information systems and technologies. Social media, professional networks and their importance for the nursing profession are explored. Emphasis is placed on the protection, privacy, and confidentiality of information in health care settings. Students have the opportunity to interact with information technologies for patient management. Exercises are presented using scenarios of virtual patients, as well as documentation in the electronic file.

**NURS 212**  
**Nursing Care of The Older Adult**  
**Three Credits**

This course focuses on the care of the older adult. It prepares undergraduate students to provide holistic, professional nursing care. Common problems in geriatric syndromes and their impact on the functional status of older adults are discussed, as well as effective strategies for care by interdisciplinary teams. The focus is primarily on functional assessment, effective communication and nursing interventions to foster functionality and manage risk during the aging process.

**NURS 303**  
**Medical Surgical Nursing I**  
**Three Credits**

This first theoretical course offers to students the opportunity to develop the knowledge needed to intervene with adults and elderly patients who are suffering acute and chronic physiological alterations that affect homeostasis. Acute and chronic health alterations in different body systems as the integumentary, cellular growth, hematologic, immunologic, nutritional-metabolic-endocrine and urinary are discussed. The relevant aspects of perioperative nursing care are presented during this course. The focus is on providing students with the knowledge needed on the physiopathologic aspect of the

health conditions studied. Application of the nursing process, communication strategies, critical thinking and therapeutic interventions, in the administration of nursing care practice focused on evidence based. Also, relevant topics of patient safety, quality of care, nutrition, cultural competence and diversity, information technologies and nursing informatics, and the clinical simulation in nursing are also integrated.

**NURS 303L**  
**Medical Surgical Nursing Practice I**  
**Two Credits**

This clinical course offer students the opportunity to develop the needed skills to intervene with adult and elderly patients with acute and chronic physiologic alterations that affect homeostasis. It's focus is directed toward the application of knowledge gained about the health conditions studied in the theoretical course, the application of the nursing process, communication skills, critical thinking and therapeutic interventions in nursing care. Patient safety, quality of care, nutrition, cultural diversity, evidenced based practice, information technology, informatics and clinical simulation are integrated. The student must complete 24 hours in the skills and simulation laboratory and 66 hours of clinical practice in the assigned setting, for a total of 90 hours/term.

**NURS 304**  
**Maternal and Child Nursing**  
**Three Credits**

This theoretical course focuses on related concepts of the childbearing patient, her infant and her family. Presentation of the nursing process as a guide for intervention with families during the normal human development process including: pregnancy, delivery, post partum and care of the newborn. Health promotion is emphasized. Integration of epidemiology, infectious, acute and chronic diseases emphasizing maternal and newborn needs in community and hospital care settings from a biopsychosocial perspective. Also, important aspects of safety, quality of care, nutrition, cultural diversity, evidence-based practice and information technologies are discussed.

**NURS 304L**  
**Maternal and Child Nursing Practice**  
**Two Credits**

This clinical course focuses in the development of the nursing skills in the childbearing patient, her infant and the impact in her family. Applied nursing process in the intervention with families during the normal human development process including: pregnancy, delivery, post partum and care of the newborn. Health promotion is emphasized. Epidemiology, infectious, acute and chronic diseases are integrated emphasizing maternal and newborn needs in community and hospital care settings from a biopsychosocial perspective. This clinical component requires the student to complete 24 hours at the Skills and Simulation Laboratory and 66 hours of clinical practice in assigned settings for a total of 90 hours/term.

### **NURS 305**

#### **Nursing Care of Children and Adolescents**

##### **Three Credits**

This theoretical course focuses on developing in students the knowledge and skills necessary for the care of children from the first year of age through adolescence. Also, the application of the nursing process, communication skills, critical thinking and therapeutic interventions, in the administration of care focused on evidence based nursing practice. Most common acute and chronic disorders and the impact of hospitalization in children and adolescents are also discussed. The development of the skills necessary for the prevention of disease, promotion and maintenance of health of this age group is emphasized. Also, holistic care, safety, quality of care, nutrition, and cultural diversity are integrated promoting the use of nursing diagnoses according to NANDA, with interventions and outcomes (NIC, NOC) appropriate to this age group.

### **NURS 305L**

#### **Nursing Care of Children and Adolescents Practice**

##### **Two Credits**

This clinical course offers the student the opportunity to develop the skills necessary for the care of children and adolescents. The student is exposed to the concepts of nursing care of the child from the first year through adolescence. The development of these skills are necessary for the prevention of disease, promotion and maintenance of health of these age groups. This course will emphasize on holistic care and the application of critical thinking, promoting the use of nursing diagnoses

according to NANDA, with interventions and outcomes (NIC, NOC) that are appropriate to this age group. The student must complete 24 hours in the laboratory (include simulation) and 66 hours of clinical practice in the assigned setting, for a total of 90 hours / term.

### **NURS 306**

#### **Medical Surgical Nursing II**

##### **Three Credits**

This course offers students the opportunity to develop the knowledge needed to intervene with adults and elderly patients who are suffering acute and chronic physiological alterations that affect homeostasis. Nursing care from the basis of healthy transitions on the patients that experience acute or chronic disease is discussed during the course. Acute and chronic health alterations in different body systems such as the cardiovascular, peripheral-vascular, gastrointestinal, muscle-skeletal, neurological, reproductive and sensory are discussed as well. The relevant aspects of nursing care emergencies, bioterrorism, and disaster are presented. Students will be provided with the knowledge needed of the physiopathological aspects of the health conditions studied. Communication strategies, critical thinking, therapeutic interventions. evidence-based nursing care are discussed. Application of the nursing process, important aspects of patient safety, quality of care, nutrition, cultural competence and diversity, information technologies and nursing informatics, as well as the clinical simulation in nursing, are presented.

### **NURS 306L**

#### **Medical Surgical Nursing Practice II**

##### **Two Credits**

This clinical course provides students with the opportunity to develop the needed skills to intervene with adult and elderly patients with acute and chronic physiologic alterations that affect homeostasis. It focuses on the application of knowledge acquired related to health conditions presented in the theoretical course. Also, the application of the nursing process, communication skills, critical thinking and therapeutic interventions in nursing care. Important aspects of patient safety, quality of care, nutrition, cultural diversity-cultural competence, evidenced based practice, information technology and informatics. Clinical simulation scenarios are also used. The student must complete 24 hours in the simulation and skills

laboratory and 66 hours of clinical practice in assigned setting for a total of 90 hours/term.

#### **NURS 403**

##### **Community Health Nursing**

###### **Three Credits**

This theoretical course focuses on the study of principles and practices involved in community health nursing and the development of skills for health education in community settings. The student is familiarized with models, theories, concepts and skills related to community interventions. Public health concepts are discussed and applied to the health improvement of different communities. Community physical and social environments are analyzed, including the role of the different organizations. Emphasis is given to priorities for health promotion and maintenance according to Healthy People 2020, including health disparities and the role of the nursing professional. Also, holistic care and the use of critical thinking when intervening in health and illness with a variety of individuals from different cultural and social backgrounds, and different age groups is presented.

#### **NURS 403L**

##### **Community Health Nursing Practice**

###### **Two Credits**

This clinical course focuses on the study of principles and practices involved in community health nursing and the development of skills for health education in community settings. Students are familiarized with models, theories, concepts and skills related to community interventions. Public health concepts are discussed and applied to the health improvement of different communities. Community physical and social environments are analyzed, including the role of the different organizations. Emphasis is given to priorities for health promotion and maintenance according to Healthy People 2020, including health disparities and the essential role of the nursing professional. Emphasis is placed on holistic care and the use of critical thinking when intervening in health and illness with a variety of individuals from different cultural/social backgrounds, and different age groups. The student must complete 24 hours of the laboratory skills and 66 hours of practice in a assigned community setting, for a total of 90 hours/term.

#### **NURS 404**

##### **Mental Health Nursing**

###### **Three Credits**

This theoretical course focuses on the discussion of the nursing process applied to patients with psychiatric disorders. The basics of mental health nursing and

treatment approaches to individual, group and family level are presented. Theories of neurobiology, psychology, sociology and spirituality are discussed. Emphasis on effective communication skills, patient safety, application of the nursing process, community mental health, critical thinking, cultural diversity, cultural competence, and nutrition. The role of nursing in psychiatric emergencies and special populations is discussed, as well as health promotion and prevention of mental illness.

#### **NURS 404L**

##### **Mental Health Nursing Practice**

###### **Two Credits**

The focus of this clinical course is the application of the nursing process in patients with psychiatric disorders. Treatment approaches are applied in patients with mental disorders at the individual level, group and family. Effective communication skills, patient safety, application of the nursing informatics process, community mental health, critical thinking, cultural diversity, cultural competence, and nutrition are applied in clinical practice. Nursing skills are applied to intervene in psychiatric emergencies and special populations in simulated situations. Students apply the relater process in their interventions with patients assigned during clinical practice. The student must complete 24 hours in the simulation skills lab to develop skills necessary for practice and 66 hours of clinical practice in the clinical assigned setting, for a total of 90 hours / term.

#### **NURS 405**

##### **Nursing Leadership**

###### **Three Credits**

The focus of this course is on the basic concepts of effective nursing leadership and management within the dynamic health care system of today. The impact of the economy, information, technology, and politics on the health care system is discussed. The problems and challenges as well as opportunities for growth and improvement of the interdisciplinary health care team are discussed. The student has the opportunity to critically analyze case studies in various health care settings. Diverse concepts and theories from research and literature are analyzed and applied to practice. The course also focuses on leadership skills that emphasize ethical and critical decision-making, and maintaining interpersonal relationships, communication, and collaboration within the interdisciplinary health care team, care coordination, delegation, and developing conflict resolution skills.

#### **NURS 406**

### **Nursing Seminar**

#### **Three Credits**

This course integrates the knowledge, skills and attitudes that are fundamental to the practice of nursing. Nursing interventions applied to patients with healthcare problems of higher prevalence are reviewed. Nursing interventions are examined focusing on patients care from different cultures, and integrating evidence-based practice. Concepts of patient safety, quality care, maintenance and health promotion are discussed in the different categories of care. Also, relevant aspects are reviewed as the coordinator and manager of the care, researcher, patient advocate and the guides and concepts related to the implications of health throughout the life cycle.

### **NURS 406L**

#### **Nursing Practicum**

#### **Two Credits**

This course offers students the opportunity to integrate the knowledge gained, promote attitudes of professionalism, internal motivation and develop responsibility for their practice. In addition, practice and refine the knowledge and skills required using critical thinking through the process of nursing. The student demonstrates mastery in relevant roles to professions: care manager, leader, educator, researcher, working in collaboration with the interdisciplinary team and patient advocate. Important aspects of patient safety, quality of care, nutrition, diversity and cultural competence, information technology and informatics in nursing and clinical simulation are integrated. The student must complete 24 hours in the laboratory of skills and simulation and 66 hours of clinical practice in the assigned setting, for a total of 90 hours / semester.

### **NURS 407**

#### **Knowledge Integration in Nursing**

#### **Three Credits**

The focus of this course is the integration of knowledge, skills and attitudes for professional nursing practice. Students have the opportunity to familiarize themselves with the requirements established by law to practice nursing, and to take the "Junta Examinadora de Enfermeras y Enfermeros de Puerto Rico" and the National Council Licensure Examination-Registered Nurse ( NCLEX-RN)" board exams. Students review and practice the essential components included in these tests, required to the nursing profession practice in Puerto Rico and the United States of America.

### **NURS 424**

#### **Principles of Palliative and End of Life Nursing Care**

#### **Three Credits**

This course discusses the concepts related to palliative care, hospice, and the role of the nursing professional as a collaborator and leader of the interdisciplinary team, in the care at the end of life. Communication techniques are presented for the identification of the patient's needs at the end of life, cultural competence in severe illness, ethical and legal aspects in palliative care. Emphasis is given to comprehensive physical examination in severe illness, as well as relevant points in appropriate pharmacology for pain management. Guidance is based on evidence and research on end-of-life and palliative care.

### **NUTR 201**

#### **Introductory Nutrition**

#### **Three Credits**

The course covers fundamentals of nutrition, such as the study of food nutrients, digestion, absorption, metabolism, and excretion. Problems associated with deficiency and excess are discussed. Students will have the opportunity to evaluate their food intake in terms of caloric content, and nutrients, and compare it with the established recommendations for individual needs.

### **NUTR 202**

#### **Food Science**

#### **Three Credits**

The course centers on evaluation of chemical, physical, functional and nutritional changes in food. Topics include evaluation of changes that take place during selection, preparation, processing, and storage of food, with attention given to the quality and retention of nutrients. The course includes an experimental laboratory with techniques to examine the chemical and physical properties in food. The necessary characteristics of food preparation and conservation of nutrients are determined, including adequate food appearance.

### **NUTR 203**

#### **Nutrigenomics-Nutrigenetics**

#### **Three Credits**

Students will discuss the effects of ingested nutrients and other food components on gene expression and gene regulation. They will also have the opportunity to identify human genetic variations that are the cause of differences in phenotypic responses to diets.

### **NUTR 204**

#### **Vegetarian Nutrition**

#### **Two Credits**

The course covers the theory and basic concepts of vegetarian nutrition. Topics include the need for essential nutrients and the health consequences in humans following a vegetarian

diet. Emphasis is given to trends in the use of vegetarian diets, fallacies, and risk factors. Topics include composition, planning, and selection of vegetarian nutrition and how to satisfy body needs at different stages of life.

#### **NUTR 205**

##### **Nutrition in Sports and Exercise**

###### **Two Credits**

The course covers basic concepts of the interaction of nutrition, sports and exercise. Emphasis is given to the athlete, his/her physical condition, nutritional needs, and other specific needs.

#### **NUTR 206**

##### **Nutrition in Alternative-Complementary Medicine**

###### **Two Credits**

The course covers theory, culture, and application of alternative-complementary medicine in nutrition. Experiences are directed towards obtaining knowledge about the use of herbs. A scientific base is provided by, utilizing and analyzing available literature and by identifying the most commonly used herbs with their generic and common names.

#### **NUTR 305**

##### **Socio-Cultural Aspects in Nutrition**

###### **Two Credits**

The course explores and analyzes socio-cultural factors associated with the decision-making process related to food intake and its effects on individual nutrition and health. Students will have the opportunity to evaluate controversies related to food and its effects on nutrition. The purpose is the formation of professionals who can participate in public policy related to food and nutrition in Puerto Rico.

#### **NUTR 310**

##### **Food Service System Management**

###### **Three Credits**

The course covers principles of marketing, financial management, and human resources applied to food service facilities. Topics include discussion of hypothetical situations for analysis and recommendations. Food services laws and regulations at the national and international levels are also discussed. Emphasis is given to leadership skills and the skills needed to influence change and improve quality.

#### **NUTR 320**

##### **Food Service Facility Design and Equipment**

###### **Three Credits**

This course centers on the importance of appropriate planning in food service facility settings. Topics include discussion of elements in the design, maintenance and operation of institutional equipment, safety, and sanitation to ensure

quality of services. Students will have the opportunity to visit food service facilities and view the institutional equipment used.

#### **NUTR 321**

##### **Institutional Menu-Planning**

###### **Three Credits**

The course centers on theory, techniques, and practice in the design, preparation, analysis and servicing of an institutional menu. The course also provides experience in basic administration of food servicing which provide nutritional meals adequate to the served population. These experiences are focused on the following: knowledge and skills of time and money management, costs per recipe, recipe standardization, portion control, food preparation, and meal management. Recent studies, trends in the food industry, consumer patterns, and general population patterns are discussed. Computer programs are included as part of the experiences in menu design and analysis.

#### **NUTR 403**

##### **Advanced Nutrition and Metabolism**

###### **Three Credits**

The course centers on evaluation of the biochemical and physiological aspects that interact in the utilization of nutrients by the human body. Health problems associated with nutritional excess or deficiencies, such as obesity, anemia, osteoporosis, and other nutritional disorders are examined.

#### **NUTR 405**

##### **Nutrition Throughout The Life Cycle**

###### **Three Credits**

This course studies the physiological and developmental changes throughout the stages of the life cycle of humans and the nutritional needs related to those stages. Psychosocial and environmental conditions that impact nutrition status at each stage of life are also examined.

#### **NUTR 420**

##### **Nutritional Assessment**

###### **Two Credits**

This course includes in-depth study of nutritional analysis methods, including dietary intake, as well as anthropometric, biochemical, and clinical measures. Students have the opportunity to practice nutritional analysis methods at individual and family levels. Students are also exposed to nutritional evaluation studies.

#### **NUTR 425**

##### **Community Nutrition**

###### **Three Credits**

The course analyzes the predominant health problems in Puerto Rico and other cultures, such as the USA. The students will become familiarized with important epidemiologic studies and government initiatives in response to the current nutritional situation and related services at public and private levels. Special attention will be given to the development and impact of government public policy in the field of nutrition. Students have at least one community field experience; the course includes a special project.

#### **NUTR 430**

##### **Senior Professional Development Seminar**

##### **Three Credits**

This course provides students with the necessary tools to assist them in the transition from the academic to the professional workplace setting. Emphasis will be placed in professionalism in the search for employment and in the workplace. Experiential learning activities will be coordinated by the professor and may include observations, shadowing or field trips.

#### **NUTR 435**

##### **Educational Strategies in Nutrition**

##### **Two Credits**

The course covers social aspects that interact with the acquisition of alimentary patterns. Students analyze the human behavior theories most utilized in the nutrition field and their application to nutritional counseling. The course also explores different educational strategies in nutrition, including communication techniques through mass media, group teaching, and individual teaching. The student will plan, practice and apply this knowledge during educational activities related with nutrition.

#### **NUTR 436**

##### **Food Service Supervised Practice Experience**

##### **N/A Credits**

The course covers the application of theory, functions and principles of management through supervised practice in healthcare facilities. Emphasis is placed on personnel and financial management, problem analysis, and quality assurance.

#### **NUTR 438**

##### **Weight Management**

##### **Three Credits**

This course is designed to present the scientific principles of weight management with an emphasis on lifestyle modification for improving health. The content includes the discussion of the trends of obesity, risk factors associated with being overweight, and chronic disease patterns. Also, the

course includes the discussion of strategies for proper weight management and strategies used to assist in reversing the obesity epidemic.

#### **NUTR 440**

##### **Medical Nutrition Therapy I**

##### **Three Credits**

This course covers the use of nutrition as a component of treating disease. Relevant biochemistry and physiology are integrated into a medical nutrition therapy plan. The course is organized by body organ system and disease. Topics covered from a medical nutritional perspective include acid base, fluid and electrolyte balance; renal, cardiovascular, gastrointestinal, hepatic, and pancreatic diseases. Special nutrition therapies are discussed. The course also introduces students to nutritional genomics, food-drug interactions, enteral and parenteral support, and medical terminology. Material is illustrated by case studies.

#### **NUTR 441**

##### **Medical Nutrition Therapy II**

##### **Three Credits**

This course continues covering the use of nutrition as a component of treating disease. Relevant biochemistry and physiology are integrated into a medical nutrition therapy plan. The course is organized by body organ system and disease. Topics covered from a medical nutritional perspective include acid base, fluid and electrolyte balance; renal, cardiovascular, gastrointestinal hepatic, pancreatic diseases. Special nutrition therapies are discussed. Material is illustrated by case studies.

#### **NUTR 442**

##### **Medical Nutrition Therapy Supervised Practice Experience**

##### **N/A Credits**

The course covers the application of principles of clinical nutrition in specific disease conditions during supervised practice in healthcare facilities.

#### **NUTR 450**

##### **Community Practice Supervised Experience**

##### **N/A Credits**

This course provides experiences that include nutrition assessment, counseling, and delivery of nutrition services to the community.

#### **NUTR 451**

##### **Nutritional Research Methods**

##### **Two Credits**

This course presents the principal methods of human nutrition research, and focuses on the role of the nutritionist as part of

a research team. Qualitative and quantitative research, research ethics, quality control, selection of dietary assessment methodology, and sources of funding are discussed. A research study is conducted as part of this course and results are shared with other students and faculty members. The students will have the opportunity to analyze research articles from wellrecognized journals in the area of nutrition.

#### **NUTR 455**

##### **Integration Seminar and Fundamental Aspects in the Nutrition-Dietetics Profession**

##### **Three Credits**

The course covers the requirements to practice the profession of dietetics in Puerto Rico. It includes review and practice of the basic components included in the examination test required by the Department of Health and Commission on Dietetic Registration to practice the profession of Nutritionist and Dietitian. The course also includes an introduction to careers in nutrition, dietetics, and food service administration, job responsibilities; interests, abilities, skills, education and experience required for the job; and job market for similar positions.

#### **NUTR 460**

##### **Purchasing and Preparation of Quantity Food Service**

##### **Three Credits**

The course centers on manager/supervisor responsibilities for food purchasing and preparation in large quantity food service systems. The course includes planning, purchasing, preparation, and service of nutritionally balanced, safe meals, in accordance with established budgets. Time to practice the concepts learned in class will be provided.

#### **NUTR 460L**

##### **Purchasing and Preparation of Quantity Food Service Lab**

##### **One Credits**

This laboratory course is designed to allow students to practice the concepts learned in NUTR 460 Purchasing and Preparation of Quantity Food Service. The laborartoy experience will allow students to evaluate quality of products, participate in a mock formal bidding process, write specifications and practice calculations used in the purchasing and preparation processes.

#### **PHAR 100**

##### **Pharmacology**

##### **Two Credits**

The course presents introductory concepts related to pharmacology, including administration routes, therapeutic use, aseptic procedures, basic concepts of non-traditional medicine, and drug interactions. The course also provides

students with the opportunity to increase their knowledge related to advantages and disadvantages of pharmacotherapy treatment in overall human wellbeing.

#### **SPTH 202**

##### **Introduction to Professions in Communication Sciences and Disorders**

##### **Three Credits**

This course provides basic information to students considering a career in the professions of Speech-Language Therapy, Speech-Language Pathology or Audiology. This course will describe the scope of practice of the professions of Speech-Language Therapy, Speech-Language Pathology or Audiology according to the applicable laws and codes of ethics. A general vision is presented of communication disorder areas as they occur across the lifespan and in relation to different etiologies. Fundamental elements are discussed regarding service delivery, including ethical, clinical, and administrative aspects. Characteristics of communication disorders are discussed, with particular emphasis on the impact to individuals and their families.

#### **SPTH 205**

##### **Anatomy and Physiology of Speech and Language**

##### **Three Credits**

The course centers on the study of primary and secondary functions of human body structures involved in the reception and production of language and speech. Normal and abnormal anatomy and physiology will be studied. The impact on speech, language, and communication of abnormal body structures and their functioning will be analyzed.

#### **SPTH 255**

##### **Language Development: Normal and Pathological Processes**

##### **Three Credits**

Through the course the student will participate in interactive experiences with infants, children and adolescents with and without language disorders. Language development from the first words through adolescence will be covered and simultaneously contrasted with pathological indicators. Controlled laboratory experiences will be offered including the management of didactic materials.

#### **SPTH 257**

##### **Intervention with Infants and Children with Auditory Dysfunction**

##### **Three Credits**

The course centers on the study of key clinical aspects for the delivery of aural habilitative and rehabilitative services to infants and children with hearing loss. The different types of hearing loss diagnosed in infants and in regular and special

education students will be discussed. Strategies and methods for aural habilitation and auditory training will be discussed.

### **SPTH 300**

#### **Speech and Hearing Sciences**

##### **Three Credits**

The course is an introduction to the acoustical nature of speech and an orientation to basic instrumentation used in measurement and analysis. Information and theories regarding normal processes of speech and hearing and how to relate those processes to various communication disorders are discussed. Students will be introduced to the science of speech-language pathology and audiology as precursors to evidence-based practice.

### **SPTH 310**

#### **Technology in Communication Science & Disorders**

##### **Three Credits**

The most common technologies for the Speech-Language Therapist for the execution of clinical and administrative tasks will be discussed and integrated. Practical experiences with computer applications and commercial and free software will be provided. Students will assess computer programs and applications to adapt them to their patients needs. Provision of distance services through the use of technology and its possible impact in confidentiality will be evaluated. Social network use in professional practice will be studied along with the behavior codes developed to this end. Ways that technological equipment helps people with disabilities to have independence within the society will also be discussed.

### **SPTH 353**

#### **Phonetics**

##### **Three Credits**

The course focuses on the manner, place, sound, and features of the production of Spanish sounds in normal and disordered speech. It will emphasize the Caribbean Spanish dialect. The course will present the International Phonetic Alphabet (IPA) and apply the IPA symbols for the transcription of normal and disordered speech. The changes in meaning that occur as a result of the incorrect positioning of the articulators or the use of a redundant feature will be analyzed. The geometry of distinctive features will be discussed as it applies to possible changes in the selection of the phoneme. There will be intensive transcription of speech samples using the IPA symbols.

### **SPTH 355**

#### **Speech Development: Normal and Pathological Processes**

### **Three Credits**

The course centers on the study of normal, delayed, and deviant phonological and articulatory systems in Spanish speaking children. The course will discuss the most relevant theories of phonological development. Intervention methods for treatment of articulation and phonological disorders will be studied and analyzed. Articulation and phonology screening processes will be presented and applied.

### **SPTH 357**

#### **Early Intervention**

##### **Three Credits**

The course is an in-depth study of early communication development that occurs during the first years of life, starting with normal and pathological sensory development and continuing all the way through pre-intentional behaviors. Clinical observations at day care centers, Pediatric Centers of the Puerto Rico Department of Health, laboratory exercises, and small group discussions will be provided. Exposure to the service delivery system of Puerto Rico Early Intervention Program, Avanzando Juntos, will be provided.

### **SPTH 375**

#### **Fluency**

##### **Three Credits**

This course centers on the study of fluency disorders and their characteristics in children and adolescents. Normal versus abnormal fluency development will be examined. Different theories of the etiology of fluency disorders will be compared. A central focus will be placed on the design and application of appropriate treatment programs for young children, school-aged children and adolescent who stutter. This will include knowledge in related areas necessary to treat this multidimensional disorder holistically, i.e. motor skills re-training, family involvement, and counseling.

### **SPTH 395**

#### **Voice**

##### **Three Credits**

The course centers on the normal aspects of voice in children and adolescents. Voice disorders, including diagnostic implications and remediation approaches, will also be studied. The course includes a detailed analysis of phonation problems and their characteristics, causes, and maintenance factors including organic, functional, and emotional aspects. Intervention strategies for voice disorders will be studied and applied in controlled clinical experiences.

### **SPTH 402**

#### **Treatment in CSD: Basics concepts, legal and ethical aspects Three Credits**

The course provides students exposure to current issues in the professions of speech pathology, audiology, speech therapy, and other related fields. Public Law 77, which is the Law that regulates the profession of speech therapy in Puerto Rico, and other related laws will be discussed. The vision of professional organizations in Puerto Rico and the United States will be presented. Peripheral aspects that frame the therapy situation will also be studied. The course includes the examination of the most basic and important aspects that should be considered when planning therapies including interviews, report writing, record keeping and staffing.

#### **SPTH 404**

##### **Treatment in CSD: Related and Severe Conditions**

##### **Three Credits**

The course centers on the study of the theories and practical knowledge needed to provide therapeutic services to children with conditions associated with problems of communication, diagnosed in infancy, childhood or adolescence (DSM IV). These conditions include: Attention Deficit Disorder with or without hyperactivity, Specific Language Learning Disabilities, Autism and Pervasive Developmental Disorders. Students will analyze of the skills required to manage clients with severe disabilities. Also included is the study of clinical strategies that will enable students to develop functional communication skills. Participants will also develop skills and attitudes needed to work with a team of professionals serving students with conditions that cause problems of communication.

#### **SPTH 406**

##### **Language Disorders**

##### **Three Credits**

This course is directed to further investigate the characteristics of language disorders in children and adolescents. Students will gain an understanding of the impact of interactive primary conditions, such as psychological disorders, syndromes and health conditions throughout the development of children and adolescents. Special attention will be placed on applicable intervention approaches, materials selection and drafting of goals and treatment plans aimed towards language areas.

#### **SPTH 440**

##### **Knowledge Integration in Speech-Language Therapy**

##### **Three credits**

The course presents a compendium of all relevant material presented in the specialty courses in order to better qualify students for the successful completion of the speechlanguage therapists board exam.

#### **SPTH 450**

##### **Clinical Practice I**

##### **Two Credits**

Students will practice clinical skills previously learned in the pathology courses. During the course students will practice in at least two clinical settings and will deliver speech and language therapy services to clients from 0 through 21 years of age.

#### **SPTH 451**

##### **Clinical Practice II**

##### **Three Credits**

Students will refine the clinical skills acquired in Clinical Practice I, Treatment II, III and IV. During the course students will practice in at least two different clinical settings that serve populations with attention deficit, learning disabilities, severe language delays, and pervasive disorders. Screening techniques and procedures will be applied in clinical settings.

# INTERNATIONAL SCHOOL OF DESIGN AND ARCHITECTURE

The International School of Design (ISD) at the Universidad Ana G. Méndez-Recinto de Gurabo initiated its operation as an administrative unit in 2006. The first two degrees that it will offer are the Bachelor's Degree in Design with concentration in Industrial Design (BDes) and the Associate Degree in Fashion Design (AFD). The School has become the seventh academic unit of the institution, and the Dean will be the Chief Officer of the School. Initially the School will have an administrative director; later, it will hire a secretary and a student affairs coordinator. The ISD faculty will report to the Dean, who reports to the Vice-Chancellor.

## MISSION

Prepare leaders and professionals in the design field who are competitive and focused toward an international academic perception, critical, multidisciplinary, committed to debate, investigation, cultural content and to the technological merits of the designed object and its production technology.

## VISION

To be known in Puerto Rico and internationally as leaders in the development of professionals in design with international and multidisciplinary perspectives, oriented toward the needs of the contemporary human being.

## GOALS

The proposed program relates to the Institutional mission. The program's goals are:

- Promote ethical and cultural values to enable students to make better use of their judgment, rights, and obligations.
- Establish international collaborations.
- Graduate well prepared students in the area of design
- Promote the uses of technology for design and production
- Establish collaborative relationships between the University and the external community by promoting research, and industrial relationships
- Fulfill the institutional mission through these goals.

## SPECIALIZED ACCREDITATION

Candidate status was granted in January 2016 for the Master Degree in Architecture by the National Architectural Accrediting Board (NAAB).

## FACULTY

Members of the faculty will be carefully chosen educators and practitioners with academic preparation and practical experience in the discipline. These faculty members will be chosen from design professionals with preparation and practice in the area.

**Ana Cristina Quiñones**/ Instructor  
MA, University of the Arts London, London, UK

**Ana Rebecca Campos** / Instructor  
MA Domus Academy, Italy

**Aurorisa Mateo** / Associate Professor  
MArch, Architectural Association, London, UK

**Elizabeth Castrodad** / Instructor  
MArch, Universidad de Puerto Rico

**Eugenio Ramírez**/Instructor  
MArch, Virginia Polytechnic and State University

**José Ramírez Rivera** / Instructor  
MArch, Universidad de Puerto Rico

**Josué Oquendo**/ Instructor  
BA, Escuela de Artes Plásticas y Diseño de Puerto Rico

**Lorena González**/ Instructor  
BDes, Universidad del Turabo

**María Gabriela Flores Kearns**/ Instructor  
MArch, Rice University

**Marimer Martínez**/ Instructor  
MA, Caribbean University

**Rudy Casillas**/ Instructor  
BDes, Universidad del Turabo

**Teresita Del Valle**/ Instructor  
MArch, Universidad de Puerto Rico  
MLArch, Universidad Politécnica de Puerto Rico

## PROGRAMS OF STUDY

### ASSOCIATE DEGREE IN FASHION DESIGN (AFD)

The Associate degree in Fashion Design will train students to take part as professionals in all aspects of the garment industry, ranging from children's apparel to men's ready-to-wear and including couture. Particular attention will be placed on the history of fashion and its recurring interpretations. Students will be asked to see fashion and its recurring interpretations as a reflection and as a component in a continuum that includes ethical practice, manufacturing, marketing, promotion, accessorizing, and disposal. Students will not only be instructed in the areas of fashion concept development, but in the business aspects of the rapidly growing clothing industry. Students may also focus on make-up and costume design for theater, television and film.

The program has several distinct areas of focus:

- General education component
- Core curriculum in design
- Business courses
- Practical experiences in different settings
- Concentration courses
- Close student-faculty interaction, and academic counseling
- Distinguished faculty who are has experience as practitioners in the field

#### GENERAL OBJECTIVES OF ASSOCIATE DEGREE IN FASHION DESIGN PROGRAM

The goals of the Associate Degree in Fashion Design are: • To provide students with the knowledge to develop their skills and contribute to our society. • To capacitate designers for a variety of settings.

#### SPECIFIC OBJECTIVES OF ASSOCIATE DEGREE IN FASHION DESIGN PROGRAM

To develop designers capable of designing innovative garments.

To fulfill the needs of local industry.

To provide designers capable of developing their own businesses and are sensitive to ethical and integrity issues.

#### Graduation Requirements

Undergraduate students of the Universidad Ana G. Méndez Recinto de Gurabo will be eligible to receive the academic degree after meeting the requirements and procedures established by the institution and the following:

- Completion and approval of a Portfolio.

#### ASSOCIATE DEGREE IN FASHION DESIGN ALUMNI PROFILE

Graduates from the Associate Degree in Fashion Design will: □ Apply the ethical principles that rule the profession.

- Have the competence to select and create the appropriate design for the clients' needs.
- Have the knowledge to develop their own business.
- Have sensibility for ethnological diversities and needs.

#### ASSOCIATE DEGREE IN FASHION DESIGN

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>9</b>
<b>Core Courses</b>	<b>6 Major Courses 45</b>

<b>General Education Courses</b>	<b>(9 credits)</b>
SPAN 152	Fundamentals of Reading and Writing 3 ENGL
152	Fundamentals of Reading and Writing 3
MATH 120	Introductory Algebra 3

<b>Core Courses</b>	<b>(6 credits)</b>
DESI 121	Drawing I 3
FSDE 100	Freshman Seminar 3

<b>Major Courses</b>	<b>(45 credits)</b>
HIDE 105	Fashion History 3
FADE 100	Basic Sewing 3
FADE 125	Representing the Body 3
FADE 131	Fashion Concept Development I 3
FADE 132	Fashion Concept Development II 3
FADE 140	Fashion Drawing 3
FADE 150	Studio Methods and Structures 3
FADE 200	Patternmaking 3
FADE 210	Construction Techniques I 3
FADE 215	Digital Fashion Design 3
FADE 240	Portfolio Studio 3
FADE 255	Core Studio: Concepts and Realization I 3
FADE 256	Core Studio: Concepts and Realization II 6
FADE 270	Internship 3

#### ASSOCIATE DEGREE IN WEB DESIGN

The goal is to become a Web Designer, an expert qualified to deal with the Internet's continuous string of advances, who has the training and skills to define, create, and design them.

A web designer configures telecommunications systems to ease people's access to content and audiovisual information.

ISD Web Design program graduates are qualified to work as:

- Web Designer
- Web Art Director
- Web Creative Director
- Multimedia Designer
- Web Specialist
- Web Information Architect

### ASSOCIATE DEGREE IN WEB DESIGN

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>15</b>
<b>Core Courses</b>	<b>12 Major Courses</b>
	<b>33</b>

#### General Education Courses (15 credits)

SPAN 152	Fundamentals of Reading and Writing	3
ENGL 152	Fundamentals of Reading and Writing	3
MATH 120	Introductory Algebra	3
INSC 101	Integrated Sciences I	3
HUMA 111	Civilization and Universal Culture I	3

#### Core Courses (12 credits)

DESI 121	Drawing I	3
FSDE 100	Freshman Seminar	3
ENTR 360	Entrepreneurship	3
HIDE 100	History of Art	3

#### Concentration Courses (33 credits)

WEDE 100	Web Design and Graphics Studio 1	3
WEDE 200	Web Design and Graphics Studio 2	3
WEDE 250	Web Design and Graphics Studio 3	3
WEDE 260	Web Design and Graphics Studio 4	3
WEDE 270	Internship	3
WEDE 280	Portfolio Studio	3
GRAD 130	Image Studio: Black and White	3
GRAD 310	Graphic Design Studio III	6
CTEC 210	Operating Systems, Installation and Configuration	3
CTEC 340	Programming for the Web	3

### ASSOCIATE DEGREE IN ARCHITECTURAL DRAFTING

With the Architectural Drafting degree, the student will be trained to manage architectural, mechanical, electrical, civil, structural and products technical drawings. In addition, the student will be prepared for the examination administered by

the Puerto Rico Drafting Accreditation Board. Graduates of our program in Architectural Drafting will be qualified to prepare paper and digital drawings, as well as plans, in 2D and 3D, using CAD software from a sketch.

Graduates will be qualified to work as:

- Architectural Drafter
- Surveyor Drafter
- Engineer Drafter
- Industrial Design Drafter
- 3D Modeler
- 2D and 3D Render

### ASSOCIATE DEGREE IN ARCHITECTURAL DRAFTING

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>12</b>
<b>Core Courses</b>	<b>6</b>
<b>Major Courses</b>	<b>42</b>

#### General Education Courses (12 credits)

SPAN 152	Fundamentals of Reading and Writing	3
ENGL 152	Fundamentals of Reading and Writing	3
MATH 120	Introductory Algebra	3
HUMA 111	Civilization and Universal Culture I	3

#### Core Courses (6 credits)

DESI 121	Drawing I	3
FSDE 100	Freshmen Seminar	3

#### Concentration Courses (42 credits)

ADID 111	Technical Drawing I	6	ADID 121	Technical Drawing I	3
ADID 122	Technical Drawing II	6	ADID 231	Computer Aided Drawing II	3
ADID 232	Technical Drawing III	6	ADID 241	Computer Aided Drawing III	3
ADID 242	Technical Drawing IV	3	ADID 250	Portfolio Studio	3
ADID 243	Methods and Construction Materials	3	ADID 270	Internship	3
ADID 244	Mechanical Drawing	3			

### BACHELOR'S DEGREE IN DESIGN WITH CONCENTRATION IN INDUSTRIAL DESIGN (BDes)

The Bachelor's program in Industrial Design will focus on the design of objects that are used to assist us in daily activities, improve the quality of our lives, and bring pleasure, creativity and meaning to the world we see and the things we do. Students will be focused on multiple productions, from limited

editions to mass market. Each student, based upon his or her general interests, will focus on the design of a range of products from furniture, appliances, wearable technology, electronics, lighting, table top items, and hardware tools to toys, human powered vehicles, devices for the elderly or disabled, to name a few areas. Particular attention will be placed on the issues of affordability, social justice, sustainability and environmental impact, and the relationship of those factors to export trade, tourism, and emerging markets.

The academic and professional orientation of the program enables students to learn different techniques in order to apply them to a diversity of clients. It also offers practical experience and business courses in order to prepare students to work in different industries or develop their own project.

The program has several distinct areas:

- General education component
- Core curriculum in design
- Business courses
- Environmental courses
- Practical experiences in different settings
- Concentration courses
- A close student-faculty interaction and academic counseling
- A distinguished faculty with experience as practitioners in the field

**Program General Objectives of Bachelor’s Degree in Design with Concentration in Industrial Design** The goals of the Bachelor’s Degree in Design with Concentration in Industrial Design are:

- To provide students the knowledge to develop the skills to contribute to our society.
- To capacitate designers for a variety of settings.

**Program Specific Objectives of Bachelor’s Degree in Design with Concentration in Industrial Design**

- To capacitate designers capable of developing their own industry.
- To develop designers capable of designing innovative products.
- To fulfill the needs of local industry.
- To provide designers capable of developing their own businesses and sensitive to ethical and integrity issues.
- To create design appropriate to clients’ needs.

## ALUMNI PROFILE

Graduates of the Bachelor’s Degree in Design with Concentration in Industrial Design will:

- Have competence skills and knowledge in industrial design.
- Be capable of working in a diversity of industries.
- Apply the ethical principles that rule the profession.
- Apply the environmental principles that rule the profession.
- Have the competence to select and create the appropriate design for the clients’ needs.
- Be able to conduct research in the field.
- Have the knowledge to develop their own industry
- Be sensible to ethnological diversities and needs.

## CURRICULUM

### BACHELOR’S DEGREE IN DESIGN WITH CONCENTRATION IN INDUSTRIAL DESIGN (BDes)

The Industrial Designer has the skills to design objects that improve people’s quality of life. Industrial designers complement people’s everyday life activities. With an ISDA Bachelor’s degree in Industrial Design, you could be a: Furniture Designer, Toy Designer, Medical Equipment Designer, Package Designer, Prototype Designer, Scenic Designer/Stage Designer and Design-Production Director.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>30</b>
<b>Core Courses</b>	<b>21</b>
<b>Major Courses</b>	<b>69</b>
<b>Elective Courses</b>	<b>3</b>

<b>General Education</b>	<b>(30 credits)</b>
SPAN 152	Fundamentals of Reading and Writing 3
SPAN 250	Writing Techniques 3
SPAN 255	Research and Writing 3
ENGL 152	Fundamentals of Reading and Writing 3
ENGL 153	Advanced Communicative English 3
ENGL 231	Research and Writing 3
MATH 120	Introductory Algebra 3
INSC 101	Integrated Science I 3
HUMA 111	Civilizations and Universal Culture I 3
SOSC 111	Community, Government and Social Responsibility I 3
HIDE 100	History of Art 3
HIDE 110	Representing Culture: Art and Artifact 1500-1850 3
INNO 300	Sustainable Innovation 3

<b>Core Courses</b>		<b>(21 credits)</b>
DESI 121	Drawing I	3
DESI 315	Ethic and Legislation in Design	3
FSDE 105	Freshman Seminar	3
ENTR 360	Entrepreneurship	3
HIDE 100	History of Art	3
HIDE 110	Representing the Culture: Art & Artifact 1500-1850	3
HIDE 200	History of Design 1800-Today	3
<b>Major Courses</b>		<b>(69 credits)</b>
INDI 140	Industrial Design Studio 1	3
INDI 150	Industrial Design Studio 2	3
INDI 250	Industrial Design Studio 3	6
INDI 251	Industrial Design Studio 4	6
INDI 300	Industrial Design Studio 5	6
INDI 301	Industrial Design Studio 6	6
INDI 400	Senior Design Project I	6
INDI 401	Senior Design Project II	6
SEDE 300	Material Survey and Properties II	3
INDI 160	Technical Rendering and Product Illustration	3
INDI 270	Models I	3
INDI 271	Models II	3
INDI 310	Contextual Research Methods	3
INDI 280	Introduction to CAD and CAID I	3
INDI 281	CAD and CAID	3
INDI 410	Portfolio Studio	3
INDI 480	Internship	3
<b>Electives</b>		<b>(3 credits)</b>

### **BACHELOR'S DEGREE IN DESIGN WITH CONCENTRATION IN GRAPHIC DESIGN (BDes)**

The graphic designer masters the language of design, in both its visual and non-visual dimensions, and faces new physical, technological, social, and cultural worlds. Graduates of the ISDA Graphic Design bachelor's program will be trained to judge appropriately the quality and effectiveness of design projects through the rigorous use of current thought in the field of design. As a Graphic Designer you can be a: Creative Director, Package Designer, Textile Designer, Corporate Identity Designer, Trademark Designer, Advertising Designer, Art Director and Printing Press Director.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>30</b>

<b>Core Courses</b>		<b>21</b>
<b>Major Courses</b>		<b>69</b>
<b>Elective Courses</b>		<b>3</b>
<b>General Education</b>		<b>(30 credits)</b>
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
MATH 120	Introductory Algebra 3	3
INSC 101	Integrated Sciences I 3	3
HUMA 111	Civilizations and Universal Culture I	3
SOSC 111	Individuals, Community, Government and Social Responsibility I	3
<b>Core Courses</b>		<b>(21 credits)</b>
DESI 121	Drawing I	3
DESI 315	Ethic and Legislation in Design	3
FSDE 105	Freshman Seminar	3
ENTR 360	Entrepreneurship	3
HIDE 100	History of Art	3
HIDE 110	Representing the Culture: Art & Artifact 1500-1850	3
HIDE 200	History of Design 1800-Today	3
<b>Major Courses</b>		<b>(69 credits)</b>
DESI 285	Digital Photography	3
GRAD 130	Image Studio: Black and White	3
GRAD 131	Image Studio: Color	3
GRAD 145	Communication Studio	3
GRAD 105	Typography I	3
GRAD 215	Typography II	3
GRAD 202	Graphic Design Studio 1	6
GRAD 210	Graphic Design Studio 2	6
GRAD 310	Graphic Design Studio 3	6
GRAD 320	Packaging Design	3
GRAD 325	Video Editing	6
GRAD 410	Senior Design Project I	6
GRAD 420	Senior Design Project II	6
GRAD 430	Portfolio Studio	3
GRAD 440	Internship	3
WEDE 100	Web Design and Graphics	3
WEDE 200	Web Artistic Graphical Design	3
<b>Electives</b>		<b>(3 credits)</b>

**BACHELOR'S DEGREE IN DESIGN WITH CONCENTRATION IN INTERIOR DESIGN (BDes)**

The interior designer plans, designs, and furnishes interiors of residential, commercial, or industrial buildings. The designer formulates design that is practical, aesthetic, and conducive to intended purposes, such as raising productivity, selling merchandise, and/or improving life style. The ISDA Interior Design Program includes manual and CAD drafting and design, space planning, design history, furniture design, lighting calculations, ergonomics and business practices. With an ISDA Bachelor's degree in Interior Design, you could be a: Residential Interior Designer, Commercial Interior Designer, Industrial Interior Designer, Project Manager, Store Window Designer, Space Planner, Trend Researcher, Material Specialist, Furniture Designer, Stage Designer and Interior Design Publication Editor or Critic.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>30</b>
<b>Core Courses</b>	<b>24</b>
<b>Major Courses</b>	<b>66</b>
<b>Elective Courses</b>	<b>3</b>

**General Education (30 credits)**

SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
MATH 120	Introductory Algebra	3
INSC 101	Integrated Sciences I	3
HUMA 111	Civilizations & Universal Culture I	3
SOSC 111	Individuals, Community, Government and Social Responsibility I	3

**Core Courses (24 credits)**

DESI 121	Drawing I	3
----------	-----------	---

DESI 315	Ethic and Legislation in Design	3
FSDE 105	Freshman Seminar	3
ENTR 360	Entrepreneurship	3
HIDE 100	History of Art	3
HIDE 106	Dwellings: The Const. Environment, Pre Hist. to 1500	3
HIDE 110	Representing Culture: Art and Artifact 1500-1850	3
HIDE 200	History of Design 1800-Today	3

**Major Courses (66 credits)**

INTE 110	Color Theory, Principles and Fundamentals of Design	3
INTE 210	Introduction to CAD and Computer Presentation	3
INTE 220	Textiles, Interior Materials, Finishes and Specifications	3
INTE 240	Plastic and Decorative Arts for Interior Design	3
INTE 310	Building Codes and Standards	3
INTE 320	Furniture Design	3
INTE 330	Lighting Design Studio	3
INTE 340	Building Systems and Construction Methods	3
INTE 150	Interior Design Studio 1	3
INTE 151	Interior Design Studio 2	3
INTE 250	Interior Design Studio 3	3
INTE 251	Interior Design Studio 4	3
INTE 350	Interior Design Studio 5	6
INTE 351	Interior Design Studio 6	6
INTE 400	Senior Design Project I	6
INTE 401	Senior Design Project II	6
INTE 410	Portfolio Studio	3
INTE 420	Internship	3

**Elective Courses (3 credits)**

**BACHELOR'S DEGREE IN SCIENCE WITH CONCENTRATION IN  
LANDSCAPE ARCHITECTURE (BSLA)**

The Landscape Architect designs, preserves, maintains and improves the natural surroundings in a sustainable and balanced form. The ISDA Science in Landscape Architecture Program includes studies and analysis from small-scale garden projects to regional and urban forest planning projects. The curriculum includes studies in history and theory, natural systems including principles of sustainability, site analysis and design, systems technologies, materials and methods, plant assessment, construction documentation, codes, ethics, regulations and professional practice. With an ISDA Bachelor's Degree in Science in Landscape Architecture, you could be a: Landscape Developer, Garden Designer, Landscape Contractor, Tourism Consultant, Planning Consultant, or a Recreational and Park Designer.

**Total Credits 123**  
**General Education Courses 30**  
**Core Courses 18 Major Courses 72 Elective Courses 3**

**General Education (30 credits)**

SPAN 152 Fundamentals of Reading and Writing 3  
 SPAN 250 Writing Techniques 3 SPAN 255  
 Research and Writing 3  
 ENGL 152 Fundamentals of Reading and Writing  
 3 ENGL 153 Advanced Communicative English  
 3 ENGL 231 Research and Writing 3  
 MATH 120 Introductory Algebra 3 INSC 101  
 Integrated Sciences I 3  
 HUMA 111 Civilizations & Universal Culture I 3  
 SOSC 111 Individuals, Community, Government  
 and Social Responsibility I 3

**Core Courses (18 credits)**

DESI 121 Drawing I 3  
 DESI 315 Ethic and Legislation in Design 3  
 FSDE 105 Freshman Seminar 3  
 ENTR 360 Entrepreneurship 3  
 HIDE 100 History of Art 3  
 HIDE 106 Dwellings: The Const.  
 Environment, Pre Hist. to 1500 3

**Major Courses (72 credits)**

HIDE 115 Landscape Design History and Theory:  
 Natural and Constructed Environments,  
 1500-Today 3

LAND 150 Introduction to Site Analysis and System  
 Technology 3  
 LAND 210 Introduction to CAD for Landscape  
 Architecture 3  
 LAND 211 CAD for Landscape Architecture 3  
 LAND 250 Landscape Construction Materials and  
 Methods 3  
 LAND 251 Site Design 3  
 LAND 340 Codes, Regulations, Ethics and  
 Professional Practice 3  
 LAND 350 Methods for Regional Landscape Design  
 Technology in Construction Documents 3  
 LAND 351 Landscape Architecture Design I: Design  
 Principles and Landscape Architecture 3  
 LAND 100 Communication 3  
 LAND 101 Landscape Architecture Design II:  
 Planting Design: Residential and  
 SmallScale Projects 3  
 LAND 200 Landscape Architecture Design III 3  
 LAND 201 Landscape Architecture Design IV 3  
 LAND 300 Landscape Architecture Design V 6  
 LAND 301 Landscape Architecture Design VI: Urban  
 Forest and Planning Issues 6  
 LAND 400 Senior Design Project I 6  
 LAND 401 Senior Design Project II 6  
 LAND 410 Portfolio Studio 3  
 LAND 440 Internship 3

**Elective Course (3 credits)**

**BACHELOR'S DEGREE IN DESIGN WITH CONCENTRATION IN  
FASHION DESIGN (BDES)**

The Bachelor degree in Design with concentration in Fashion Design will train students to take part as professionals in all aspects of the garment industry, ranging from children's apparel to men's ready to wear to couture. Particular attention will be placed on the history of fashion and its recurring interpretations. Students will be asked to see fashion and its recurring interpretations as a reflection and as a component in a continuum that includes, ethical practice, manufacturing, marketing, promotion, accessorizing, and disposal. Students will not only be instructed in the areas of fashion concept development, but also in the technical aspects of the rapidly growing clothing industry.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>30</b>
<b>Core Courses</b>	<b>18</b>
<b>Major Courses</b>	<b>72</b>

<b>General Education</b>	<b>(30 credits)</b>		
	SPAN 152	Fundamentals of Reading and Writing	3
	SPAN 250	Writing Techniques	3
	SPAN 255	Research and Writing	3
	ENGL 152	Fundamentals of Reading and Writing	3
	ENGL 153	Advanced Communicative English	3
	ENGL 231	Research and Writing	3

DESI 121	Drawing I	3
DESI 315	Ethic and Legislation in Design	3
FSDE 105	Freshman Seminar	3
HIDE 100	History of Art	3
HIDE 110	Representing Culture:	
	Art and Artifact 1500-1850	3
HIDE 200	History of Design 1800-Today	3
FADE 100	Basic Sewing	3
FADE 125	Representing the Body	3
FADE 131	Fashion Concept Development I	3
FADE 132	Fashion Concept Development II	3
FADE 140	Fashion Drawing	3
FADE 150	Studio Methods and Structures	3
FADE 200	Patternmaking	3
FADE 210	Construction Techniques I	3
FADE 215	Digital Fashion Design	3

FADE 230 Fabric Science 3

MATH 120 Introductory Algebra 3 INSC 101 Integrated Sciences I 3

HUMA 111 Civilizations & Universal Culture I 3

SOSC 111 Individuals, Community, Government and Social Responsibility I 3 **Core Courses (18 credits)**

**Major Courses (72 credits)**

FADE 255	Core Studio: Concepts and Realization I	3
FADE 256	Core Studio: Concepts and Realization II	3
FADE 310	Core Studio: Concept and Realization III	3
FADE 315	Construction Techniques II	3
FADE 320	Construction Techniques III	3
FADE 330	Digital Patternmaking	3
FADE 400	Seniors Design Project I	6
FADE 401	Senior Design Project II	6
FADE 405	Digital Fashion Design II	3
FADE 440	Portfolio Studio	3
FADE 470	Internship	3
HIDE 105	Fashion History	3

**Elective Courses (3 credits)**

INNO 300	Sustainable Innovation	3
ENTR 360	Entrepreneurship	3

## DESCRIPTION OF COURSES

(Courses marked with @ could be offered in both modalities, traditional or on-line.)

### ADID 111

#### Technical Drawing I

##### Six Credits

This course introduces to the student to the profession of architectural drafting, the basic principles of drawings, laws and regulations. It includes the identification and use of the drawing instruments, alphabet of letters, lines, measurement and scales, applied geometry, orthographic projections, sectionals, isometric views oblique, perspective, auxiliary views, raised hand sketching and sizing. Students will complete their work on a drawing table.

### ADID 121

#### Computer Aided Drawing I

##### Three Credits

This is an introductory course in the use of AutoCAD computer-aided drafting software. Students will learn the advantages and disadvantages of using computer graphics, as well as fundamental capabilities of AutoCAD such as how to draw and edit entities (lines, circles, arcs, etc.). In addition the students will learn more advanced concepts such as how to work with layers and how to write text and dimension drawings. The course concludes with a final project that consists of drawing the floor plan, sections, and elevations of a two-bedroom residence.

### ADID 122

#### Technical Drawing II

##### Six Credits

This course is a continuation of ADID 111 and emphasizes the elements of the architectural sketch such as learning how to draw floor plans, dimensions, elevations (facades) and architectural sections. The symbols and nomenclature will be used in detail. The details in drawings of kitchens, bathrooms, bedrooms and dining rooms will also be discussed. Site and location, plans and other field elements will be examined.

### ADID 223

#### Methods and Construction Materials

##### Three Credits

This course introduces students to the basic principles of the methods and materials used in construction, including the final estimated cost of work. Students will learn about the different government agencies and private associations that govern construction. They will also learn about the different

types of materials used to produce the various works, emphasizing concrete and steel, which are very common. The range of information provided will give the student the opportunity to become a versatile draftsman and be useful in drafting the different ideas of professionals with whom he interacts.

### ADID 231

#### Computer Aided Drawing II

##### Three Credits

This course addresses the advanced AutoCAD technique of creating symbol libraries and working with isometric drawings. The emphasis of the course is on preparing students to produce civil (structural), mechanical (plumbing) and electrical drawings. Students will prepare their own symbol libraries to represent valves, pump, electrical outlets, etc. In addition, students will learn how to use the symbol libraries already created for AutoCAD. The course concludes with a final project, which consists of drawing the structural, plumbing, and electrical drawings of two-bedroom residence. This residence is the same one for which the architectural drawings were prepared in DRAF121 AutoCAD I.

### ADID 232

#### Technical Drawing III

##### Six Credits

This course examines the particular requirements to create civil (structural), mechanical (plumbing and HVAC), and electrical drawings. The emphasis is on familiarizing the students with the nomenclature and organization of the drawings. Fundamental principles for each of the subjects will be briefly presented as background. The course concentrates on examining and analyzing several construction drawings donated to engineering professor Juan C. Morales for educational purposes. Students will practice the concepts learned in class during the laboratory session. The laboratory session will include both drafting with instruments and drafting with the computer using AutoCAD.

### ADID 240

#### Mechanical Drawing

##### Three Credits

The course introduces students to the fundamentals of mechanical and industrial design through study and analysis of the physical description of the objects. This course includes topics such as: assembly drawing, welding drawing, structural delineation, industrial pipe drawing, flat air conditioning ducts and introduction to the civil drawing (typography). By using the table and drawing instruments,

students develop the manipulative skills required in the plans.

**ADID 241**  
**Computer Aided Drawing III**  
**Three Credits**

This course addresses the advanced AutoCAD technique of creating symbol libraries and working with isometric drawings. The emphasis of the course is in preparing civil (structural), mechanical (plumbing) and electrical outlets, etc. In addition, students will learn how to use the symbol libraries already created for AutoCAD. The course concludes with a final project which consists of drawing the structural, plumbing, and electrical drawings of a twobedroom residence. The residence is the same for which the architectural drawings were prepared in course DRAF 231 AutoCAD II.

**ADID 242**  
**Technical Drawing IV**  
**Three Credits**

This course prepares the student in the facet of foundations, situations plan and localization, topographic maps reading and additional topics on surveying like transversal, and card calculation. All work is done in a drawing table. The class concludes with a final project where the student draws the localization of a residential in a level according to the zonification zones.

**ADID 250**  
**Portfolio Studio**  
**Three Credits**

This studio will focus on the preparation and refinement of a portfolio that encompasses the student's work within the program and any other distinguishing activity. The goal will be the production of a refined, multifaceted presentation of the student goals and creative vision and his or her ability to engage in professional practice.

**ADID 270**  
**Internship**  
**Three Credits**

All students will be required to take part in a professional internship that employs a wide range of skills and knowledge developed in this degree program. Each student will work with a department advisor to fully realize the potential of this experience in an Architectural Drafting industry or giving professional services to an industry in drawing realization.

**ANDE 100**  
**Design Studio I- 2D and 3D Animation (Analog)**  
**Three Credits**

This course covers the fundamentals of animation and explores handmade animation techniques and processes. Also, in this course will focused in understanding the relationship of bones and muscles at relax and in movement to be able to translate this to creating and maintaining correct volumes in anatomy drawing. Studying human, species and animal movement through sequential drawings, faces, gesture and poses drawing. Also in this course will show the technique called Stop-Motion. The students will create characters from different materials and manipulate them frame-by-frame to bring them to life. In this class the student will be asked to develop two dimensional characters that are both personally and culturally resonant and imaginative. Particular emphasis will be placed on the expressive power of abstract forms and color. Research, thorough craftsmanship, and strong sophisticated designing will be stressed.

**ANDE 150**  
**Design Studio II – 2D Animation (Computer)**  
**Three Credits**

This course introduces the student to the creative experience while they learn the potential of this very dynamic form of expression in a computer based medium. Through studio projects, students will be introduced to the basic principles of 2D animation, including timing, movement for animation, and basic editing. The class focuses on process rather than the finished product. Individuality and experimentation will be emphasized. Class exercises will be filmed with digital video cameras, computer edited, and output to DVD.

**CTEC 200**  
**Computers and Peripherals**  
**Four Credits**

This course covers all components and ancillary systems comprising a PC. It provides an introduction to every component and analyses its functionalities and weaknesses. It analyses the role of each component in supporting an application and the user functional goal. It presents the PC as a package of matched components and dissects all of its internals individually and integrally. Some of the components covered are the CPU, RAM, display apparatus, ROM, Fixed Disk, USB, Network Adapter, CD-ROM, CDR's, DVD's, Floppy disk, Serial and Parallel ports, Mouse, Keyboard and others. It also covers the most critical peripherals such as, Printers, Scanners, Digital Imagery equipment, Modems and others.

**CTEC 210**  
**Operating Systems, Installation and Configuration**  
**Three Credits**

This course covers all software components comprising a PC. It provides an introduction to every component and analyses its functionalities and weaknesses. It analyses the role of each component in supporting an application and the user functional goal. It presents the PC as a package of matched components and dissects all of its internals individually and integrally. Some of the software components covered are: the operating system and its subcomponents, data communications software components, DOS components, peripheral administration components, Windows Systems architecture, disk operating software, essential user applications, memory management software, and software upgrades management. The course covers in detail the diagnosis, procedures and resolution of software problems. It also deals with the Virus problem and the most effective software solutions. Finally, it covers Networking from a software perspective.

### **CTEC 340**

#### **Programming for the Web**

##### **Three Credits**

This course provides the student with a basic understanding and skills to program for Web Sites. It covers the basics of Data Base manipulation techniques using MySQL and PERL. It covers matters such as configuration for DBA systems on the Web, Perl scripts, performance, and error handling. Finally, the students are presented with a live example of a simple Web Based DBA control application. The course then focuses on one of today's most important development in suite/environment, the Macromedia Dreamweaver/Flash environment. It covers the complete development cycle using these tools, from plan to publishing and maintenance. Matters such as Dreamweaver graphics, formatting for the Web, style sheets, cascading sheets, dimensional tables, forms, frames, templates, layers, animation and others are covered. It also covers Fireworks image and text manipulations, working with objects, effects, creating buttons, backgrounds, hotspots, sliced images, rollovers, integrating Fireworks images with HTML applications and finally, auditing and publishing a Web Site and post-publishing practices.

### **DESI 121**

#### **Drawing I**

##### **Three Credits**

This studio course provides students with instruction in fundamental freehand drawing skills. Students will be working with models and other live subjects. The importance of sketching as a means of recording and demonstrating concepts and processes will be emphasized. The development of fundamental drawing skills will be stressed, and standard manual product illustration skills will be introduced. Pencil, charcoal, ink, pastels and watercolors will

be used to render figures and objects. Developing an ability to convey volume, texture and form through line and gesture will be stressed.

### **DESI 131**

#### **Image Studio Color**

##### **Three Credits**

This course builds upon the curriculum of Image Studio - Black & White and introduces color into rendering and representation skills. Digital color imaging and printing skills are introduced and students will be taught basic digital and film photographic documentation skills. In addition, students will learn traditional product illustration techniques including marker and colored pencil techniques.

### **DESI 200**

#### **Introduction to Screenprinting**

##### **Three Credits**

This course covers the fundamentals of screenprinting as a reproduction medium for design in Puerto Rico. The method will be applicable to a various media, forms and shapes. The medium is based on permeability and ink deposit through fabric. Learning this technique will help students develop the creativity. Research, thorough craftsmanship, and strong sophisticated designing will be stressed.

### **DESI 255**

#### **Core Studio: Concept Development and Realization I**

##### **Four Credits**

This is a core studio in this program. Students continue to develop their awareness of specific markets within fashion and increase their ability to target their individual styles to a specific market segment. Students create portfolios of original design lines within the categories of the couture and high-priced industry. They apply knowledge of the couture to design, drape, fit, and construct a mini collection for a particular target market. They develop styles and images through fabric sourcing, market research, and inspirational research. Emphasis is placed on continuity of style within design, presentation and trend analysis through the study of collections showing in London, Milan, Paris and New York. Students learn the principles of draping as a method of designing original garments in three-dimensional forms. Draping techniques and construction skills are developed for more advanced structured garments, along with an understanding of silhouette, proportion and current style trends. Students work on developing their strengths in design to ensure establishment of a defined and strong personal design philosophy.

This course expects innovative design solutions from the students that reach beyond popular forecasts. Personal

interpretation and risk-taking are emphasized. The collection designed in this course will be basis for production in Construction Techniques I.

### **DESI 256**

#### **Core Studio: Concept Development and Realization II**

#### **Four Credits**

This is a core studio in this program. It is an introduction to swimwear and intimate apparel design. Students gain a broad working knowledge of swimsuits, intimate apparel and related apparel, such as cover-ups and beach accessories. Original designs are produced using flat pattern and draping techniques and industry specific construction methods and machinery. In this studio students will develop a collection of their own choosing. They will undertake research and develop a concept that they feel expresses their vision and strengths as a designer. These ideas will be applied in the development of a collection of a dozen looks. Working with specialized crafts studios will be stressed when appropriate. The collection designed in this course will be the basis for production in Construction Techniques II.

### **DESI 260**

#### **Technical Rendering: Measurement and documentation methods**

#### **Two Credits**

This course will focus on the mastery of manual technical rendering skills as the basis for an understanding of the physical specificity of a designed object. The topic is approached as a decision-making and communication process. Students will be taught not only the tradition of manual drafting but the meaning of the language it embodies and the way that language translates in computerized terms. Students will develop portfolios of renderings that express a range of design decisions and construction specifications involved in the evolution of objects.

### **DESI 285**

#### **Digital Photography**

#### **Two Credits**

This course develops students' creative vision of the photographic composition that is necessary for application in the design world, beginning with analog photography and ending with digital photography. Students will work with different formats for digital images. They will learn how to work with the most useful software in the digital images industry, as a tool for managing and manipulating digital images.

### **DESI 315**

#### **Ethic and Legislation in Design**

#### **Three Credits**

This course introduces students to legal and ethics issues that affect design. Topics examined include intellectual property, freedom of expression and contract law. The basic legal issues of contract and property law, within the creative context, will be examined: agreements, copyright, trademark, and patents. Students will learn how to protect their rights, and as importantly, how to lead the legal debate with the identification of legal concepts and terms which apply to the practice of design. In addition, the course will approach other ethics issues: free speech, obscenity, pornography, libel, privacy and their damages. The course will introduce students the ability of distinguishing poor from good ethical justifications. Legal moral and ethical principles will also be examined.

### **FADE 100**

#### **Basic Sewing**

#### **Three Credits**

This course is designed to help the student become familiar with the basics of machine sewing, get confident handling a machine, and develop a range of related skills, like looking at different needles suitable for fabric types, practicing standard stitches, seaming straight, curved and gathered edges, learning most common seam types (as French seams and flat fell seams), etc.

### **FADE 125**

#### **Representing the Body**

#### **Three Credits**

This course focuses on the human form. Understanding human anatomy will be the point of departure for exercises that employ various media to represent the body in action and repose. In addition to developing research skills, students will focus on documenting the body through digital photography, drawing, collage and digital rendering, using Adobe Illustrator and various fashion Computer Aided Design programs.

### **FADE 131**

#### **Fashion Concept Development I**

#### **Three Credits**

This is a core studio in this program. Each student's primary goal is the development of new fashion concepts. In the first semester students will use their local environment as the site from which ideas will be culled. These ideas will be applied in the development of a collection of a dozen looks. Women's wear will be stressed. Clothing designed in this course will be basis for clothing production undertaken in

the second semester's Studio Methods and Structures. This course will focus on the economics and production standards of the prêt-à-porter industry.

#### **FADE 132**

##### **Fashion Concept Development II**

###### **Three Credits**

This is a core studio in this program. Each student's primary goal is the development of new fashion concepts. In the second semester, the research focus of this course will be on global trends in the sportswear and active wear industries and their niche markets. These ideas will be applied in the development of a collection of a dozen looks. Men's wear and children's apparel will be stressed. The collection designed in this course will be the basis for production in Studio Methods and Structures. This course will focus on the economics and production standards of the prêt-à-porter industry.

#### **FADE 140**

##### **Fashion Drawing**

###### **Three Credits**

In this studio students will continue to build upon skills developed in Representing the Body and will employ those skills in special assignments related to the development and production of a collection of poses and bodies. Textiles illustration will be addressed. The primary work of this class will be drawing from the live clothed model to develop industry-standard fashion illustration skills. The maintenance of a sketchbook and the production of sketch drawing will be stressed.

#### **FADE 150**

##### **Studio Methods & Structures**

###### **Three Credits**

The basis of work in this course will be traditional tailoring techniques, from draping to the technology of using various materials. The creation of forms that interact with the human body will be explored. Experimental approaches suggested by students' designs produced in Fashion Concept Development I will also be explored. This course is a hands-on clothing construction studio. Sewing skills will be stressed and patternmaking skills will be introduced.

#### **FADE 200**

##### **Patternmaking**

###### **Three Credits**

Traditional patternmaking skills will be the focus of this course. The instructor will take students through a series of exercises that develop these skills. Primary focus will be placed on the development of patterns for designs created by the students as part of program coursework.

#### **FADE 210**

##### **Construction Techniques I**

###### **Three Credits**

The work of this course will be linked to designs developed in Core Studio Concept Development and Realization I. Students will continue to develop their sewing, patternmaking and construction skills with a particular focus on collaboration with other technicians and craftspeople. This course will introduce the students to the sewing techniques practiced in the finest haute couture ateliers around the world and provide the basis for understanding couture. Students will learn couture techniques in cutting, hand stitching, seam and hem finishes, pocket construction, pressing, and finishing.

#### **FADE 215**

##### **Digital Fashion Design**

###### **Three Credits**

This course will focus on the range of digital technologies used in the fashion industry. With a primary focus on Computer-Aided-Design software, students will learn flat pattern drafting, and fashion illustration technologies that will enhance the accuracy of their construction skill and increase their ability to visualize color and other potential variations in their designs.

#### **FADE 220**

##### **Introduction to Costume Design**

###### **Three Credits**

In this studio the students will be introduced to the costume design world of the theater, film and television. The course includes a historical analysis of clothing and textiles, a research phase and an evaluation phase, leading the student to the design of the graphic project. This design is supported by the laboratory, which is the practical portion of the course. In addition to historical costumes, other costumes will be created according to the student's inclinations, through the personal interpretation of various themes. Encounters with experts from the field of theater, film and television are also included in this course.

#### **FADE 240**

##### **Portfolio Studio**

###### **Three Credits**

This studio will focus on the preparation and refinement of a portfolio that encompasses the student's work in the program and any other distinguishing activity. The goal will be the production of a refined, multifaceted presentation of the student's goals and creative vision, and his or her ability to engage in professional practice.

**FADE 255****Core Studio: Concepts and Realization I****Three Credits**

This studio is a core studio in this program. Students continue to develop their awareness of specific markets within fashion and increase their ability to target their individual styles to a specific market segment. Students create portfolios of original design lines within the categories of the couture and high-priced industry. They apply knowledge of the couture to design, drape, fit, and construct a mini collection for a particular target market. Students also develop styles and images through fabric sourcing, market research, and inspirational research. Emphasis is placed on continuity of style within design, presentation and trend analysis through the study of collections showing in London, Milan, Paris and New York. Students learn the principles of draping as a method of designing original garments in three dimensional forms. Draping techniques and construction skills are developed for more advanced structured garments along with an understanding of silhouette, proportion and current style trends. Students work on developing their strengths in design to ensure establishment of a defined and strong personal design philosophy. This course expects students to produce innovative design solutions that reach beyond popular forecasts. Personal interpretation and risk-taking are emphasized. The collection designed in this course will be basis for production in Construction Techniques I.

**FADE 256****Core Studio: Concepts and Realization II****Six Credits**

This studio is a core studio in this program. The course is an introduction to the design of swimwear and intimate apparel. Students gain a broad working knowledge of swimsuits, intimate apparel and related apparel such as cover-ups and beach accessories. Original designs are produced using flat pattern and draping techniques and industry specific construction methods and machinery. In this studio students will develop a collection of their own choosing. They will undertake research and develop a concept that they feel expresses their vision and strengths as a designer. These ideas will be applied in the development of a collection of a dozen looks. Working with specialized crafts studios will be stressed when appropriate. The collection designed in this course will be basis for production in Construction Techniques II.

**FADE 260****Concept Presentation****Two Credits**

Presentation is essential to understanding and marketing fashion. In this course students will address the marketing of their designs. They will develop branding for themselves as unique designers that will include marketing strategies and the production of a runway show. This show will be a by-invitation event designed to introduce the designer to the general public.

**FADE 270****Internship****Three Credits**

All students will be required to take part in a professional internship that employs a wide range of skills and the knowledge developed in this degree program. Each student will work with a department advisor to fully realize the potential of this experience in a fashion design industrial company or by giving professional services to a company involved in fashion realization.

**FADE 310****Core Studio: Concept and Realization III****Three Credits**

This is a core studio in this program. Each student's primary goal is the development of new fashion concepts. In this third Core Studio, the research focus of the course will be on experimental and conceptual designs: creation of original and unique silhouette and construction details will be the main goal for the student. These ideas will be applied in the development of a women's collection of a dozen looks: two of these looks will be realized during lab sessions.

**FADE 315****Construction Techniques II****Three Credits**

Student will continue to develop his/her sewing, patternmaking and construction skills, focusing on the realization of one pair of pants, a vest and a child's dress. The whole production process will be analyzed: pattern realization (by draping and/or patternmaking), fabric cutting, sewing and grading.

**FADE 320****Construction Techniques III****Three Credits**

Student will continue to develop his/her sewing, patternmaking and construction skills. In this course the student will learn the sewing techniques practiced in the finest haute couture ateliers around the world. The whole process needed for garment construction will be analyzed for the realization of classic and casual jackets and coats: from draping and patternmaking to fitting, cutting, sewing, hand stitching, pressing, finishing and size grading.

**FADE 330**  
**Digital Patternmaking**  
**Three Credits**

This course focuses on the use of computers and specialized software for the production of fashion patterns, according to fashion industry standards. Students will learn how to draft, manipulate and grade digital pattern for industrial production.

**FADE 400**  
**Senior Design Project I**  
**Six Credits**

Students will engage in a two-semester long process, based upon professional practices, that will result in the development of an interior design project. Students are required to develop and submit a programmatic project proposal with the approval and guidance of the Senior Design Project Committee and faculty. Emphasis is placed on a high degree of complexity and challenge within the design project.

**FADE 401**  
**Senior Design Project II**  
**Six Credits**

This course is a continuation of the work begun in FADE 400. Students continue the process, based upon professional practices, that will result in the development of a fashion design project. Design processes employed in earlier courses will be applied in the ideation, research, design documentation, and completion of a fashion design proposal. Investigation of design trends and market research will be undertaken as students work toward innovation in their designs.

**FADE 405**  
**Digital Fashion Design II**  
**Three Credits**

Students will improve their skills in using digital technology: fashion collections will be designed completely through the use of software for Computer Aided Design (CAD), such as "Adobe Photoshop" and "Adobe Illustrator". Students will also learn basic concepts of graphic design.

**FSDE 100**  
**Freshman Seminar**  
**Three Credits**

This course will provide the student activities, techniques and academic experiences in terms of design discipline. The student will be able to identify and develop personal and academic skills to improve their performance.

**FSDE 105**  
**Freshman Seminar**  
**Three Credits**

This course will provide the student activities, techniques and academic experiences in terms of design discipline. The student will be able to identify and develop personal and academic skills to improve their performance.

**GEDE 300**  
**Globalism and Cultural Integrity**  
**Three Credits**

This course focuses on the role of a global economy, ecology, and political circumstances in the designers' ability to effect change in various cultural contexts. Beginning with discussion of artisan traditions and designing to cultural specificity, this course proceeds through investigations of notions in universal design, inclusive design, social entrepreneurship, cultural supremacy, technology and the impact of outsourcing and other shifts in global economies on the physical culture of the 21<sup>st</sup> Century.

**GRAD 105**  
**Typography I**  
**Three Credits**

Students will learn about the history of typography. Topics include classification, anatomy, and different types of typography. Students will study the different typographical expressions. They will analyze optical effects of typography, as well as the typographical measuring system. They will also learn to work with typographic composition and start to design their own typographies. Students will study the development of digital typography, from analog to digital processes and they will learn to convert these into vector images, using Bézier curves to create each character. Then using a conversion program, students will pass to True Type (TT), changing to a digital font. Students will learn about different international organizations that work in the development and study of typography.

**GRAD 130**  
**Image Studio Black and White**  
**Three Credits**

The objectives of this course include the introduction of digital image making and graphic design software; the development of image research skills; the development of narrative presentation skills; and a cross-cultural introduction of information organization systems. These skills will be applied in various forms required of industrial designers including, simple instruction manuals, research documents, user scenarios, and various forms of presentation boards. Particular attention will be placed on typography and photographic imagery.

**GRAD 131**  
**Image Studio – Color**  
**Three Credits**

This course builds upon the curriculum of Image Studio - Black & White and introduces color into rendering and representation skills. Digital color imaging and printing skills are introduced and students will be taught basic digital and film photographic documentation skills. In addition, they will learn traditional product illustration techniques including marker and colored pencil techniques.

**GRAD 145**  
**Communication Studio**  
**Three Credits**

This course introduces designers to skills necessary for the organization of information and for giving live presentations. The focuses on the publishing and graphic design skills employed in the development of documents and presentation materials, ranging from business cards and announcements to booklets, research documents, concept presentations and exhibition materials. In addition, significant attention will be paid to students live presentation skills. These presentations will be coached, scripted, videotaped and critiqued. For this course Apple computers and a video recording studio are required.

**GRAD 201**  
**Graphic Communication Media**  
**Three Credits**

This is an introductory course on the fundamentals and concepts of the media of graphic communication. Students study the different graphic communications media, such as digital video for multimedia work, graphic design and typography, effective communication for printing, design and composition of pages, and illustrations, as well as the fundamentals of design. Students must stay current and study the aspects and new developments in the publishing industry. They also analyze technological development and its relationship with traditional operations and with emerging demands in methods and creations of design, management, programming and distribution..

**GRAD 202**  
**Graphic Design Studio I**  
**Six Credits**

The objective of the course is to provide students with basic knowledge about the history and evolution of graphic design up to the digital era. Students will learn how to work with design elements: image and typography. They will begin to differentiate between vector image and raster image. Students will use software to manage both types of images.

They will also design simple publications, such as stationery, brochures, posters, shoppers, creative resumés, and newspaper advertisements. They will learn to select the suitable image format for the importation and exportation images among software in use.

**GRAD 210**  
**Graphic Design Studio 2**  
**Six Credits**

Students will learn to diagram a publication of multiple pages. They will study the entire component of a publication in books, magazines, newspapers, shoppers, and brochures. Importation and management of digital images to all types of publications will be taught. Topics include the design of master pages, layers, typographic styles, columns and other elements of a digital publication. Students will also study and create grids.

**GRAD 215**  
**Typography II**  
**Three Credits**

In this course students will learn how to manage fonts in different platforms. Students will begin to recognize the various digital fonts in existence and how they are developed. They will learn how to manage these fonts in the different media available and to integrate typography as a design element and as an image. They will transport the text to the different software and learn all the specifications considered necessary to complete the task. Students will begin to create their own fonts library and use the internet as a searching tool to select fonts which are suitable for their design.

**GRAD 310**  
**Graphic Design Studio 3**  
**Six Credits**

In this course students will obtain knowledge in the area of interface design, beginning with the creation of a nonlinear conceptualization in the graphic design area. They will work with dynamic design principles. Students' previous courses had a static basis; this course has a dynamic basis. Students will begin to work with the design of button, menus, bars, links and graphics in movement, while applying basic knowledge of design to a multimedia protect.

**GRAD 315**  
**Ethics and Legislation in Design**  
**Three Credits**

This course introduces students to legal and ethical issues that affect design. Topics examined include intellectual property, freedom of expression and contract law.

Students will learn how to protect their rights, and equally importantly, how to lead the legal debate with the identification of legal concepts and terms that apply to the practice of design. Basic legal issues of contract and property law within the creative context will be examined. Among the topics explored will be the work for hire agreement, the consignment agreement and the agency agreement. Copyright law, trademarks, and patents will also be explored. Issues such as registering a copyright, copyright infringement, registering a trademark and patents will be examined from the perspective of the designer in analog and digital design.

**GRAD 320**  
**Packaging Design**  
**Three Credits**

In this course students learn components and principles of packaging design. Topics include the history of the package and the importance of design elements (image and typography) on the packaging design. Students will recognize the importance of art as a design element, as are color, space, shape, texture, and lines. They will obtain knowledge of managing the different materials available for the creation of a package that can be designed and created by students. They will also study some of the rules and regulations established for package design, and will learn the different classifications that condition transportation and storage of packages.

**GRAD 325**  
**Video Editing**  
**Six Credits**

Students will begin to study the bases for linear and nonlinear video edition. Students will learn about the RGB color mode used in computer monitors and commercial television. They will learn logistics and techniques for video recording and the appropriate techniques for video editing. Students will learn how to integrate text on the video screen and how to work with programs for digital video editing. Finally, they student will learn how to select from different system memories, storage systems, as well as the appropriate format for the project.

**GRAD 410**  
**Senior Design Project I**  
**Six Credits**

In this course, students begin a process based on professional practices that will result in the development and completion of a graphic design proposal. Design processes employed in earlier courses will be applied in the ideation, research, design documentation, and prototyping of the new product. Investigation of design trends and market research

will be undertaken as students work toward innovation in their designs.

**GRAD 420**  
**Senior Design Project II**  
**Six Credits**

This course is a continuation of work begun in the first semester. Students continue a process based upon professional practices that will result in the development and completion of a graphic design proposal. Design processes employed in earlier courses will be applied in the ideation, research, design documentation, and completion of a graphic design proposal. Investigation of design trends and market research will be undertaken as students work toward innovation in their designs.

**GRAD 430**  
**Portfolio Studio**  
**Three Credits**

This studio will focus on the preparation and refinement of a portfolio that encompasses the student's work within the program and in any other distinguishing activity. The goal will be the production of a refined, multifaceted presentation of the student's goals and creative vision, as manifestation of his or her ability to engage in professional practice.

**GRAD 440**  
**Internship**  
**Three Credits**

All students will be required to take part in a professional internship that employs a wide range of skills and knowledge developed in this degree program. Each student will work with a department advisor to realize the potential of this experience fully, either in a graphic design company or by giving professional services to a graphic artist in a product realization.

**GRDE 130**  
**Typography I**  
**Three Credits**

In this course students will acquire knowledge about the history of typography. Topics include classification, anatomy and the differentiation of types. Students will learn about different expressions on typography and will analyze optical effects of typography. Students will learn about typography measure systems and their composition. Students will start designing their own typography. Later, they will also be studying digital typography in order to convert analog designs to digital designs and, from paper to vectors. Bezier Curves will be taught as a means to create a character. Students will also explore the True Type (TT) digital

conversion. International typographers organizations will be studied and acknowledged.

**HIDE 100 @**  
**History of Art**  
**Three Credits**

This course surveys the history of the representation of the human body as a record of the social, technological, environmental, and political circumstances of a period. The goal of this course is to establish among young designers an understanding of art as an expression of the desires, aspirations, needs, esthetics, and available resources of subjects/users throughout history. Human beings and their representations of the environment will be examined, from the earliest representations of humans, through current film and digital media that envision the future,.

**HIDE 105**  
**Fashion History**  
**Three Credits**

This seminar course traces the development of fashion and body adornment in Asia, Africa, Europe, Greece and Roman Empire through the establishment of Paris, Milan, New York and Latin America as distinct fashion capitals, as well as the establishment of independent fashion centers across the globe. Economic, political, technological, environmental and cultural history will be discussed in relation to fashion's evolution.

**HIDE 106 @**  
**Dwellings: The constructed environments,**  
**Prehistory to 1500**  
**Three Credits**

This course examines the evolution of architecture and design as a production of human imagination. Through lectures, tutorials and research projects the students will understand the way in which architecture and design is always dominated by the exigencies of time and location and developed as a consequence of forces of economy, trade, war, political situations, religion, or the exchange of knowledge.

**HIDE 110 @**  
**Representing Culture: Art and Artifact 1500-1850**  
**Three Credits**

This course will study the history of art and objects in the contexts of one another, economics, industry and technology, culture, politics and sociology. Beginning in 1500, the migration of ideas around the globe will be explored in relationship to the evolution of design and art. Particular attention will be paid to moments when cultures

intersect and the impact of those moments on the course of ideas and material culture.

**HIDE 115**  
**Landscape Design History and Theory:**  
**Natural & Constructed Environment from 1500 -**  
**Today.**

**Three Credits**

This course offers a study of the history and theory of Architecture, Landscape Architecture and Urban Design since 1500. The course emphasizes the relationship between design of the natural and built environment and will pay close attention to socio-cultural, technological, aesthetics and environmental factors.

**HIDE 200 @**  
**History of Design 1800-1945**  
**Three Credits**

Through lectures, tutorials and research projects students will be introduced to the history of design, from the industrial revolution through the innovations of WWII. Relationships between design, art, industry, environment, and culture will be discussed as factors in the development of design. The rise of urbanism, history, politics and technological advances will be examined as pivotal influences in design.

**HIDE 300**  
**Design Since 1945**  
**Three Credits**

This course surveys the history of design from 1945 up to today. Students will discuss design in both the industrialized Western world and the Far East. Topics introduced include the global who's who of designers, architects, cultural and national design organizations, and corporate icons. Design components, such as modernism, consumerism, reconstruction after World War II; nostalgia and heritage; social responsibility, and their influence on design will be researched. Industrial design as a powerful marketing tool that has captured the international consumer through culture, socioeconomics, politics, and technology will be examined.

**INDI 140**  
**Industrial Design Studio 1**  
**Three Credits**

This course focuses on the development of 3-dimensional forms. Issues of materiality, ergonomics, and user interface will be introduced through exercises that result in iterations of a series of familiar typologies. Masses, volumes, containers, shells, and skins will be explored in various materials, alone and in combination. Particular attention will

be placed upon the history of form as a manifestation of culture, environment and technology.

**INDI 150**  
**Industrial Design Studio 2**  
**Three Credits**

In this design studio students will be introduced to design methodologies that will form the basis of their training as industrial designers. Through a series of design projects and exercises students will be introduced to issues of accessibility in relationship to ability, physical and psychological development, gender, culture and environment. Ergonomics will also be treated. An on-line component will tie studio work to related literature, historical precedents and research methodology. Furniture design will be developed.

**INDI 160**  
**Technical Rendering and Product Illustration**  
**Three Credits**

This course will focus on the mastery of manual technical rendering skills as the basis for an understanding of the physical specificity of a designed object. Approached as a decision-making and communication process, students will be taught not only the tradition of manual drafting, but also the meaning of the language it embodies and the way that language translates in computerized terms. Students will develop portfolios of renderings that express a range of design decisions and construction specifications involved in the evolution of objects.

**INDI 250**  
**Industrial Design Studio 3**  
**Six Credits**

Through lectures, design exercises, individual and group projects, and other activities, students will delve further into the processes involved in the practice of industrial design. Students will be taught by means of professional methodologies as well as through pin-ups and desk critiques. This course is particularly focused on the development of user scenarios, ideation, and concept presentation through the design of hand tools and other simple objects. Students will also treat user interfaces and ergonomics. Design, art and social history will be referenced throughout the course and students will be expected to complete significant research project that address these factors in the development of their own work.

**INDI 251**  
**Industrial Design Studio 4**  
**Six Credits**

This course builds on the work done in DESI 250 - Industrial Design 3: Core Studio: Concept and Realization I, and further explores user-centered design, ergonomics, and legible interfaces, within the context of inclusive design. In addition, students will undertake projects that involve the inclusion of engineered mechanisms and external power sources.

**INDI 270**  
**Models I**  
**Three Credits**

This course introduces model making as a vehicle for the development and realization of design concepts. The uses of various forms of representation will be taught and contextualized, from sketch models to scaled representation to full scale appearance models. Professional standards will be stressed. Students will be instructed in choice of materials, assembly, milling, sanding, priming, and the use of the lathe, vacuum former, bending machines, and the hot belt.

**INDI 271**  
**Models II**  
**Three Credits**

This course builds upon the knowledge and skills learned in INDI 270 - Models I. Students will incorporate those skills in the production of models and working prototypes. Complex, contextualized models will also be built. These projects will be executed both individually and in teams.

**INDI 280**  
**Introduction to CAD and CAID**  
**Three Credits**

Students will be introduced to industry standard computeraided design and computer-aided industrial design software that will provide students with the ability to produce detailed two-dimensional renderings of objects for industrial production. Studio Tools, Alias, Rhinoceros, Solidworks, and Ashlar Graphite will be taught. Particular attention will be paid to the integration of skills taught in this class with manual drafting skills.

**INDI 281**  
**CAD and CAID**  
**Three Credits**

In CAD and CAID II, students will be taught either Alias, a 3D modeling and rendering program using Silicon graphic workstation (SGI), the IRIX operating system and the Alias studio package, or Solidworks, a 3-D parametric modeling and surfacing program. Through sequences of tutorials, students will develop familiarity with these programs. Through the use of these programs in the execution of a

studio project, they will have direct experience in their application within a design process.

### **INDI 300**

#### **Industrial Design Studio 5**

##### **Six Credits**

This studio course draws upon all skills and knowledge that students have acquired in studio to date. Employing a design process taught in their sophomore year students will develop mass-produced products for use by individuals in private life. Projects will include furniture, lifestyle accessories and electronics, as well as industry-sponsored collaborations. In this class students will research new materials and technologies and apply them in their designs, which in turn must address issues of utility, market niches, trends, inclusive design, sustainability and functionality.

### **INDI 301**

#### **Industrial Design Studio 6**

##### **Six Credits**

This studio course continues the efforts of INDI 300, drawing upon all the skills and knowledge that students have acquired in studio to date. Employing a design process taught in the sophomore year students will develop mass-produced products for use by individuals in private life. Projects will include furniture, lifestyle accessories and electronics, as well as industry-sponsored collaborations. In this class students will research new materials and technologies and apply them in their designs, which in turn must address issues of utility, market niches, trends, inclusive design, sustainability and functionality.

### **INDI 310**

#### **Contextual Research Methods**

##### **Three Credits**

This course is about understanding people, and understanding the culture in which design solutions exist. Students experience various contextual research methods, including Contextual Inquiry, Interviews, Focus Groups, and Questionnaires, and develop and practice unique and innovative user research methodologies. Through these techniques, they learn how to synthesize large quantities of user research, and allow research to drive design.

### **INDI 311**

#### **Rapid Prototyping II**

##### **Three Credits**

This course builds upon the curriculum of Rapid Prototyping and is an individualized studio-based course in which students will combine traditional construction and rapid

prototyping. Each student will produce short runs of a product designed for mass production in the Core Studio.

### **INDI 315**

#### **Sustainable Practice**

##### **Three Credits**

This studio focuses on the goals and principles that frame a sustainable approach to design practice. From discussions, lectures and studio exercises, students will be introduced to the environmental issues raised in materials, production methods, distribution, use, and disposal involved in the products they design. In addition, human, business, institutional, political and cultural factors that pertain to the impact of design will be discussed.

### **INDI 316**

#### **Business Practices**

##### **Two Credits**

This course will focus on business practices that impact industrial design industries. Topics to be covered will include: team practices, organizational structures, market size, penetration and shares, competitive analysis, product line up, licensing, copyrights, patents, intellectual property, pricing and branding. Students will also be introduced to the development process and the uses and implementation of business plans.

### **INDI 400**

#### **Senior Design Project I**

##### **Six Credits**

Students will engage in a two-semester long process, based upon professional practices. The process will result in the development and prototyping of a complex, mass-produced product. Design processes employed in earlier courses will be applied in the ideation, research, design documentation, and prototyping of the new product. Investigation of design trends and market research will be undertaken as students work toward an innovation in their designs.

### **INDI 401**

#### **Senior Design Project II**

##### **Six Credits**

This course is a continuation of work begun in the first semester. Students continue a process, based upon professional practices that will result in the development and prototyping of a complex, mass-produced product. Design processes employed in earlier courses will be applied in the ideation, research, design documentation, and prototyping of the new product. Investigation of design trends and market research will be undertaken as student work toward an innovation in their designs.

**INDI 410****Portfolio Studio****Three Credits**

This studio will focus on the preparation and refinement of a portfolio that encompasses the student's work within the program and any other distinguishing activity. The goal will be the production of a refined, multifaceted presentation of the student's goals and creative vision and his or her ability to engage in professional practice.

**INDI 480****Internship****Three Credits**

All students will be required to take part in a professional internship that employs a wide range of skills and knowledge developed in this degree program. Each student will work with a department advisor to fully realize the potential of this experience.

**INTE 110****Principles and Fundamentals of Design****Three Credits**

This is an introductory course that presents the basic elements and principles of design. Focusing on the study of human perception, dimension, and spatial activity requirements, students will work on problem identification, research methods and sources, and the parameter of appropriate design solutions.

**INTE 115****Color Application Theory****Two Credits**

This course introduces the student to color theory and its relationship to graphic and tridimensional composition. A systematic approach to selecting interior color is offered. In addition, students will develop coloring techniques for visual representation, rendering, and illustration.

**INTE 150****Interior Design Studio 1****Three Credits**

This studio course introduces students to the design process, problem solving, small-scale one-space spatial organization, anthropometrics, and presentation techniques. Through lectures and design exercises, students will develop concepts to achieve interior design goals and apply theoretical knowledge and technical skills to their interior design solutions as they work on a variety of professionally relevant interior design projects.

**INTE 151****Interior Design Studio 2****Three Credits**

This studio course builds up the skills developed in Interior Design Studio I. To continue to develop these skills, students will be given a series of projects of increasing complexity, but at an elementary level. This course will also focus on the study of historical precedents and research methodology as fundamental parts of the design process.

**INTE 210****Introduction to CAD and Computer Presentation****Three Credits**

This course will introduce the use of computer-aided design and other industry related software, as standard tools for interior design illustration, drafting, and design development. Students will develop the skills and technical knowledge for the development of two-dimensional drawing and three-dimensional modeling of building interiors.

**INTE 220****Textiles, Interior Materials, Finishes and****Specifications****Three Credits**

This course examines the functional and aesthetic properties of specific finishes for a given interior. It will also present materials in terms of history, uses and characteristics, ranging from wood, concrete, ceramics, metals, plastics, textiles and composites. Through lectures, demonstration, specific exercises and hands-on examination, students will be introduced to manufacturing techniques involved in the design and construction specifications of interior details and finishes.

**INTE 225****Textiles Components and Standards****Two Credits**

The objective of this course is to introduce students to the types of textiles, fabrics and, their components, as well as to the nature of synthetic and natural fabrics and their characteristics. Content includes discussion of yarns, fabrics, finishes, design methods, aesthetic applications, specifications, and their compliance to building codes and regulations.

**INTE 240****Plastics and Decorative Arts for Interior Design****Three Credits**

This course introduces students to the examination of current use of plastic and decorative arts in the interior environment. Students will be introduced not only to current trends in style, art objects, contemporary artists and expressions, but also to the relationships and

interconnections between current trends and the development of “taste” over the last years.

### **INTE 250**

#### **Interior Design Studio 3**

##### **Three Credits**

Through lectures, design exercises, pin-ups, and desk critiques, students will continue to develop skills in the design process. Topics include programmatic concerns involved in residential, commercial, and institutional interior design projects. Students will develop projects at an intermediate level of complexity, emphasizing professional applications and the role of the interior designer as an environmental problem solver.

### **INTE 251**

#### **Interior Design Studio 4**

##### **Three Credits**

This studio course builds upon knowledge and skills learned in Interior Design Studio III. Students will incorporate the skills learned and will continue to develop them through design projects of increasing complexity. These projects will be carried out by students working individually and in teams.

### **INTE 310**

#### **Building Codes and Standards**

##### **Three Credits**

This course focuses on the study of physical requirements and code restrictions and how they form an integral part of the design criteria of every building project. Students will be introduced to the history of building regulations and learn how codes were developed, organized, and designed to secure uniformity and protect the public’s interest, health, safety, and welfare.

### **INTE 320**

#### **Furniture Design**

##### **Three Credits**

This course introduces students to the design process as it applies to furniture, focusing on furniture ergonomics, materials, construction and manufacturing techniques, and design. Students will research selected topics and design seating, work-service pieces, and cabinetry. Emphasis will be placed on the design process, detailing, documentation, and presentation techniques.

### **INTE 330**

#### **Lighting Design Studio**

##### **Three Credits**

This course offers a comprehensive study of the possibilities of lighting as one of the primary elements of the interior

environment. Students will be introduced to various topics that influence lighting design decisions, such as properties of materials as they relate to light, codes and laws, lighting technologies, electricity and electrical distribution systems, and their application in the execution of a studio project.

### **INTE 340**

#### **Building Systems and Construction Methods**

##### **Three Credits**

This course introduces students to structural principles and construction methods of buildings. Ranging from concrete construction, prefabricated modules, wood and metal structures, students will familiarize themselves with these systems in order to make design decisions for the creation of an interior environment. In addition, they will study mechanical systems, such as ventilation, air conditioning, plumbing, and electricity, and the integration of these systems as design elements.

### **INTE 350**

#### **Interior Design Studio 5**

##### **Six Credits**

This studio course draws upon all the skills and knowledge that students have amassed to date. Students will deal with advanced problems in interior design, developing designs to the highest level of detail, integrating building systems, lighting, interior finishes, and colors. Energy conservation, sustainable materials, the psychological impact of spaces, and the meaning of place are important issues in this course.

### **INTE 351**

#### **Interior Design Studio 6**

##### **Six Credits**

Built upon knowledge and skills acquired in Interior Design Studio 5, this course emphasizes individual competence in the total design process. Students will be encouraged to make knowledgeable decisions to produce solutions reflecting a high level of achievement.

### **INTE 400**

#### **Senior Design Project I**

##### **Six Credits**

Students will engage in a two-semester long process, based upon professional practices. The goal is the development of an interior design project. Students are required to develop and submit a programmatic project proposal, with the approval and guidance of the Senior Design Project Committee and faculty. Emphasis is placed on a high degree of complexity and challenge within the design project.

### **INTE 401**

#### **Senior Design Project II**

### **Six Credits**

This studio serves as the second part of a two-studio sequence dedicated to the development and production of a major interior design project. Students continue the design project through the conventional phases of design development, documentation, and presentation. A written research component must accompany the drawings, as well as models and other presentation techniques.

### **INTE 410 Portfolio Studio Three Credits**

This studio will focus on the preparation and refinement of a portfolio that encompasses the student's work within the program and any other distinguishing activity. The goal will be the production of a refined, multifaceted presentation of the student's goals and creative vision and his or her ability to engage in professional practice.

### **INTE 420 Internship Three Credits**

All students will be required to take part in a professional internship that employs a wide range of skills and knowledge developed in this degree program. Each student will work with a department advisor to realize the potential of this experience fully.

### **LAND 100 Landscape Architecture Design I: Design Principles and Graphic and Visual Communication Three Credits**

This course offers an introductory overview of design fundamentals and the elements that comprise the basic units of the visual image. The course aims to involve the student on creative two-dimensional and three-dimensional projects. It includes an introduction to techniques of landscape architectural diagrams, plans and sections, manual drafting and design drawing skills, with an emphasis on the development of basic drafting capacity and graphic presentation literacy. It also includes an introduction to three-dimensional drawing: axonometric, perspectives, plus the use of architectural models as design tools. In addition, it provides a basic approach to shades and shadows (black and white) as well as color rendering techniques.

### **LAND 101 Landscape Architecture Design II: Planting Design: Residential and Small Scale Projects Three Credits**

This course treats topics of residential and small scale project design and master planning. It also includes a serious

assessment of plant materials as well as architectural materials and graphic presentation.

### **LAND 110 Introduction to Landscape Architecture: Reading The Landscape Three Credits**

The course is an introduction to the program as well as to information about recent topics related to the curriculum. It presents the discipline through the analysis of the built environment and ecological aspects, as well as through cultural and social issues. A variety of design issues are addressed through historical examples including the role of the Landscape Architect throughout history and how it has evolved. Topics related to the built environment and its effects on the natural systems are discussed including principles of sustainability, as well as land use plans, policies and strategies to improve urban concerns that impact quality of life. The course includes an approach to perception and how individuals construe and interpret the natural landscape. Topics include the landscape in art and literature, visual assessment techniques, use of maps, field sketching and photography.

### **LAND 150 Introduction to Site Analysis and System Technology Three Credits**

The course centers on discussions and project-based investigations of site inventory and analysis of existing conditions as well as grading, vegetation and drainage principles in landscape architecture projects.

### **LAND 200 Landscape Architecture Design III Three Credits**

The course is a Landscape Architecture Design studio where the student is required to creatively develop recreational, institutional, commercial and/or residential facilities projects applying design principles learned and assessed in LAND 101.

### **LAND 201 Landscape Architecture Design IV Six Credits**

This course prepares the students to extensively explore the design process through spatial solutions. This learning experience includes topics on natural systems, such as land forms, water, vegetation, wildlife, and soils, as well as climate and its interaction with grey infrastructure, such as roads, buildings and utilities. Commercial and institutional design, as well as planning resource analysis and planting

design are also approached. Projects will emphasize the principles of sustainable design solutions.

#### **LAND 210**

##### **Introduction to CAD for Landscape Architecture**

##### **Three Credits**

The course is an introduction to Computer-Aided-Design (CAD) as a drafting and representation technique. The students will learn how to create landscape architectural drawings; use layers, dimension, line types and color to display drawings for plotting; use commands to draw and edit objects; and develop a symbol library. They will be working on plans, sections, elevations and site contours.

#### **LAND 211**

##### **CAD for Landscape Architecture**

applications, construction detailing, recyclable materials, and its application in sustainable design.

#### **Three Credits**

In this course students will complete a typical design problem utilizing the Computer-Aided-Drawing (CAD) method and other software programs used in the landscape architecture industry. They will develop a two and three-dimensional set of drawings as part of a construction drawing set. In addition, they will be developing renderings and three-dimensional presentations.

#### **LAND 250**

##### **Landscape Construction Materials and Methods**

##### **Three Credits**

The course is an introduction to the properties and production on man-made landscape building materials such as concrete, wood, and steel, among others. It includes an exploration of the performance of materials in exterior

#### **LAND 251**

##### **Site Design Three Credits**

This course will study the aspects of land manipulation and consideration of earth bound natural and constructed elements in landscape design, contours, landform, grading design, hydrography, drainage principles and computations, as well as cut and fill calculations. Topics in site ecology and microclimate, and how these influence the design will be discussed. Plant material identification and assessment topics will also be discussed.

#### **LAND 300 Landscape Architecture Design V Six Credits**

This course offers a study of mixed-use projects. It focuses on communities' issues and individual privacy. It also treats topics of town and city planning, neighborhoods, circulation patterns for public, private and pedestrian movement, family dwellings and open green spaces such as: parks, recreational facilities, squares and plazas, and green corridors. These projects are of regional significance; they emphasize green infrastructure solutions, taking into consideration the role of ecology.

#### **LAND 301**

##### **Landscape Architecture Design VI: Urban Forest**

##### **Issues and Planning Three Credits**

The course centers on the design of large scale projects. Emphasis is on urban forest, large scale institutional, commercial or mixed use locations. The objective is to accentuate the benefits of the urban forest. The design and planning process focuses on how valuable and vital the urban forest and green spaces are for communities. The topics convey the beneficial attributes for health improvement, crime reduction, pollution related illnesses' and improvement of quality of life, as they are an inspirational validation.

**LAND 350****Methods for Regional Landscape Design****Three Credits**

This course focuses on the study of regional landscape design methods, their performance for sustainable design and the implementation of green infrastructure or green corridor. Topics emphasize the different alternatives in methods available. It also includes a detailed discussion of plants materials and how these are affected by different climates and environments.

**LAND 351****Technology in Construction Documents****Three Credits**

This course focuses on a detailed discussion and analysis of the development of the construction documents process through the study of simple structures pertinent to the landscape design. These include bridges, retaining walls and, pools, among other. The students will learn how to prepare detailed specification documents, working drawings, detailed drawings, and document layouts. The principles, theory and calculations of irrigation and lighting design are also studied. A portfolio of work is expected at the end of the semester.

**LAND 400****Senior Design Project I****Six Credits**

Based upon professional practices, students will begin a process, that will result in the development of a landscape architecture design. Design processes employed in earlier courses will be applied in the ideation, research, design documentation, and implementation of the landscape project. Investigation of design trends and market research will be undertaken as students work toward an innovation in their designs.

**LAND 401****Senior Design Project II: Thesis Studio****LAND 340****Codes, Regulations, Ethics and Professional Practice****Three Credits**

This course offers an overview of the regulations and legal aspects in the practice of landscape architecture. Issues of code compliance, standards, regulations, ethics, licensure, practice types, professional services, business development, contracts, and project management will be addressed. Students will explore different roles and responsibilities and develop a project as a landscape architecture firm.

**Six Credits**

This course is a continuation of the work begun in the previous semester (LAND 400). Based upon professional practices, students begin a process, based upon professional practices, that will result in the development of a landscape architecture design. Design processes employed in earlier courses will be applied in the ideation, research, design documentation, and implementation of the landscape. Investigation of design trends and market research will be undertaken as students work toward an innovation in their designs. A written report is required at the end of the semester.

**LAND 410****Portfolio****Three Credits**

This studio will focus on the preparation and refinement of a portfolio that encompasses the student's work with in the program and any other distinguishing activity. The goal will be the production of a refined, multifaceted presentation of the student goals and creative vision and his or her ability to engage in professional practice. The student will also learn to prepare a resumé, presentations, and a letter of preparation. The student is presented and coached on interview techniques, preparation of design competition packages and a preview of the licensing exams.

**LAND 440****Internship: Practicum****Three Credits**

All students will be required to take part in a professional internship that employs a wide range of skills and knowledge developed in this degree program. The course centers on off-campus professional practice under the supervision of a licensed landscape architect or related practitioner. A minimum of twelve weeks-part-time supervised employment is required. Each student will work with a department advisor to fully realize the potential of this experience, either in a landscape architecture industry or firm, or giving landscape architecture professional services in a product realization.

**SEDE 200****Material Survey and Properties I****Three Credits**

This seminar course will introduce students to the history, uses, and characteristics of materials ranging from woods, metals, and ceramics, to plastics, industrial textiles and composites. Through research assignments, selection exercises, lecture demonstrations, and hands-on examination, students will be introduced to the world's material culture, its history, application, and impact.

**SEDE 300****Material Survey and Properties II****Three Credits**

This course builds on the curriculum of Material Survey and Properties I, and provides more in-depth analysis of material properties and their uses. Through lectures and research projects student will deepen their knowledge of material, paying particular attention to the way they behave when utilized with various material processes.

**WEDE 100****Introduction to the Internet and XHTML****Three Credits**

In this course, a number of topics are discussed in detail: computers versus software, performance issues, types of Internet connections, safety, security troubleshooting, composing effective mail, net etiquette, organizing information, introduction to e-commerce, customizing tools, chat and online synchronous communications, forums, and blogs. Also covered are: basic design publishing languages, such HTML and XHTML. Web design and publishing concepts will be introduced.

**WEDE 200****Web Design and Graphics****Three Credits**

This course focuses on the principles of Web usability, client purpose and needs as key elements in successful Web Design. Simplicity of design is introduced as a practical web design principle. Some of the topics covered are page loading time, graphics design for the Internet, writing for the web, document size and readability, fonts for the web, color schemes and visual impact, and site architecture vs. content. Students will be introduced to some software tools and effective web site navigation strategies.

**WEDE 250****Web Design and Graphics Studio 3****Three Credits**

The student begins the course learning the fundamentals of digital imaging; audio is combined with Web technologies. This course will also introduce the student to interactive media authoring, video technology, learning programming and scripting techniques using Flash, JavaScript and ActionScript for design, animation, and data handling. A study of 2D and 3D animation using computer modeling and animation software program as the primary tool. This course will emphasize the creation of animated sequences and GIF animation for multimedia applications.

**WEDE 260****Web Design and Graphics Studio 4****Three Credits**

This course will teach the student through the methods used in dynamic websites' integration. Will create content types and management, social media and mobile applications.

**WEDE 270 Internship****Three Credits**

All students will be required to take part in a professional internship that employs a wide range of skills and knowledge developed in this degree program. Each student will work with a program advisor to fully realize the potential of this experience in a web design industry.

**WEDE 280****Portfolio Studio****Three Credits**

This studio will focus on the preparation and refinement of a portfolio that encompasses the student's work with in the program and any other distinguishing activity. The goal will be the production of a refined, multifaceted presentation of the student goals and creative vision and his or her ability to engage in professional practice.



# SCHOOL OF NATURAL SCIENCES AND TECHNOLOGY

## SPECIALIZED ACCREDITATION

The School of Science and Technology at Universidad Ana G. Méndez-Recinto de Gurabo responds to the educational needs of a society undergoing rapid economic growth and technological development. The School provides a rich learning environment in which students may pursue programs of higher education that will advance their career objectives, while at the same time instilling the motivation to continue to learn and grow intellectually throughout life.

It is the mission of the School to foster liberal education, to encourage the generation of knowledge and to contribute to the well-being of the community. The School promotes lifelong learning, research, social and professional responsibility, and growth. To these ends the School challenges students to think critically and intuitively, recognize and value diverse perspectives, and to solve problems creatively and with perseverance.

Three majors in natural sciences are offered: general science, biology (with tracks in microbiology, medical sciences and biotechnology), and chemistry. Each major offers basic courses as well as specialized and advanced courses in biology, chemistry, physics, and mathematics. A variety of electives are offered to ensure a well-rounded and complete education.

The objectives of the School are to:

1. Develop within graduates a broad proficiency in scientific knowledge and professional competence.
2. Provide high quality academic and practical training that will enhance the learning experience.
3. Develop in graduates the ability to think and analyze solutions for contemporary scientific problems using the scientific method.
4. Promote and develop research at all levels.
5. Prepare students to use modern technology and instruments in their careers.
6. Establish joint research projects with other institutions, national laboratories and industries, promoting diversity among students and faculty.
7. Foster lifelong learning and intellectual growth.
8. Instill in graduates a sense of values, which will foster responsible participation in civil and public affairs.

The bachelor's degree in Sciences with concentration in Chemistry is member of de American Chemical Association since September 2016.



## FACULTY

**Adriel Vázquez** / Associate Professor  
PhD, Universidad de Puerto Rico

**Agustín Ríos-Ramos** / Professor PhD,  
Universidad de Puerto Rico

**Anastacio Emiliano-Sosa** / Professor  
PhD, Universidad de Puerto Rico

**César M. Lozano-Paulino** / Professor  
PhD, Universidad de Puerto Rico

**Claribel Báez Felix** / Associate Professor  
PhD, Universitat Valencia (España)

**Eileen Rodríguez** / Associate Professor  
PhD, Michigan State University

**Eva L. Cáceres-Roure** / Associate Professor  
MS, Universidad de Puerto Rico

**Francisco Márquez-Linares** / Professor  
PhD, Universidad de Valencia

**Fred Schaffner Gibbs** / Professor  
PhD, University of Miami

**Ileana González** / Associate Professor  
PhD, Universidad de Puerto Rico

**Johanna Hudo** / Instructor  
MS, Universidad de Puerto Rico-Ciencias Médicas

**José E. Sánchez-Villafañe** / Associate Professor

MS, Universidad de Puerto Rico

**José J. Ducongé-Hernández** / Professor  
PhD, University of Moscow

**José R. Pérez Jiménez** / Professor  
PhD, Rutgers State University

**Lisandro Cunci Pérez** / Assistant Professor  
PhD, Universidad de Puerto Rico

**Margie Sánchez** / Associate Professor  
PhD, Louisiana State University

**María F. Barberena** / Associate Professor  
PhD, Universidad de Puerto Rico

**María Del C Cotto** / Assistant Professor  
PhD, Universidad del Turabo

**María Ocasio** / Associate Professor  
PhD, Universidad de Puerto Rico

**Mayra Cummings** / Instructor  
MS, Universidad Interamericana

**Nilda Boria** / Associate Professor  
DMD, Universidad Central Rep Dom

**Olga L. Quintero-Fonseca** / Associate Professor  
EdD, Universidad de Puerto Rico

**Ruth Vallejo-Flores** / Associate Professor  
MS, Universidad de Puerto Rico

**Santander Nieto-Ramos** / Associate Professor  
PhD, Universidad de Puerto Rico

**Sharon A. Cantrell-Rodríguez** / Professor  
PhD, University of Georgia

**Samuel I. Flores-Colón** / Assistant Professor  
PhD, University of Chicago

**Teresa Lipsett-Ruiz** / Professor  
PhD, Fordham University

**Alba Miranda** / Chemistry

**Carlos Neira** / Physics

**Carmen Bonilla** / Chemistry

**Dalia Huguet** / Chemistry

**Francisco Díaz** / Physics

**Francisco Rivera** / Biology

**Iro García** / Physics

**Javier Vázquez** / Mathematics

**Lilliam Ruiz** / Mathematics

**Marcos Rodríguez** / Biology

**Zulma P. Ortiz** / Biology

#### LABORATORY TECHNICIANS

**Aida L González** / Mathematics

## PROGRAMS OF STUDY

### ASSOCIATE DEGREE IN BIOPHARMACEUTICAL TECHNOLOGY

The biopharmaceutical technology program enables our graduates to opt for jobs in both manufacturing and biotechnology companies, with an emphasis on industry trends and the latest technology available to develop advanced medicines that improve human health. The student receives extensive training in science and regulations applicable to the biotechnology and pharmaceutical process.

**Total Credits** **58**  
**General Education Courses** **26**  
**Core Courses**     **8 Major Courses** **24**

#### General Education Courses (26 credits)

MATH 120	Introductory Algebra	3
MATH 120L	Introductory Algebra Laboratory	0
MATH 121	Intermediate Algebra	3
MATH 121L	Intermediate Algebra Lab	0
MATH 151	College Algebra	4
MATH 151L	College Algebra lab	0
MATH 152	Trigonometry and Analytic Geometry	4
MATH 152L	Laboratory Trigonometry and Analytic Geometry	0
ENGL 152	Fundamentals of Reading and Writing	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
HUMA 111	Civilizations and Universal Culture I	3
GESC 105	Freshman Seminar	3

#### Core Courses (8 credits)

BIOL 100	Applied Microbiology	3	BIOL 100L	Applied Microbiology Lab	1
CHEM 101	Applied Chemistry	3	CHEM 101L	Applied Chemistry Lab	1

#### Con Courses (24 credits)

BIOT 101	Introduction to Biotechnology	3
BIOT 103	Cell and Molecular Biology for Biotechnology	3
BIOT 103L	Cell and Molecular Biology for Biotechnology Lab	1
BIOT 210	Regulations and Good Manufacturing Practices	3

BIOT 240	Validation	3
BIOT 231	General Manufacturing Biotechnology I	3
BIOT 231L	General Manufacturing Biotechnology I Lab	1
BIOT 250	General Manufacturing Biotechnology II	3
BIOT 250L	General Manufacturing Biotechnology II Lab	1
PHOP 255	Water Purification and Treatment Systems in Pharmaceutical & Chemical Processes	3

### ASSOCIATE DEGREE IN SCIENCE IN FOOD TECHNOLOGY AND SAFETY

The Associate of Science program in Food Technology and Safety allows students to understand the processes, regulations and science related to the manufacturing of foods and food preservation. Alumni will be able to work in the food industry or in the government agencies and will be able to make decisions regarding the safety of food products. Students will apply their knowledge in their practicum.

**Total Credits** **60**  
**General Education Courses** **21**  
**Core Courses**     **17 Major Courses** **22**

#### General Education Courses (21 credits)

MATH 120E	Introductory Algebra	3
MATH 120E-L	Laboratory of Intensive Algebra	0
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SOSC 111	Introduction to Social Sciences I	3
GESC 105	Freshman Seminar	3

#### Core Courses (17 credits)

BIOL 100	Applied Microbiology	3
BIOL 100L	Laboratory of Applied Microbiology	1
CHEM 101	Applied Chemistry	3
CHEM 101L	Laboratory of Applied Chemistry	1
GESC 107	Introduction to Computers	1
SCIE 250	Communication and Teams in the Workplace	3
GESC 264	Introduction to Science Research	3

#### Concentration Courses (22 credits)

BIOL 301	Food Microbiology	3
BIOT 210	Good Manufacturing Practices	3
FOOD 101	Introduction to food technology	3
FOOD 201	Microbial Food Safety Hazards and Quality	3

	Control	3
FOOD 250	Food safety and protection related to public health (HACCP)	3
FOOD 300	Food Laws and Regulatory Processes	3
MANA 260	Managerial Strategies	3
PTTE 200	Internship in Technology	1

### BACHELOR'S DEGREE IN SCIENCE WITH CONCENTRATION IN GENERAL SCIENCE

This program allows the student to have a broad view of the natural sciences, with a dynamic approach and with applications of technology. The graduate may choose to be certified as a science teacher at the secondary level or to pursue graduate studies in one of the scientific disciplines of his choice.

<b>Total Credits</b>	<b>122</b>
<b>General Education Courses</b>	<b>43</b>
<b>Major Courses</b>	<b>28</b>
<b>Major Elective Courses</b>	<b>37</b>

#### General Education Courses (43 credits)

ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
GESC 105	Freshman Seminar	3
GESC 107	Introduction to Computers for Science Students	3
GESC 264	Introduction to Scientific Research	3
SOSC 111	Individual, Community, Government and Social Responsibility I	3
SOSC 112	Individual, Community, Government and Social Responsibility II	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
MATH 152	Pre-Calculus II	4
MATH 152L	Pre-Calculus II Lab	0

#### Major Courses (28 credits)

BIOL 203	General Biology I	3
BIOL 203L	General Biology I Lab	1
BIOL 204	General Biology II	3

BIOL 204L	General Biology II Lab	1
PHSC 203	General Physics I	3
PHSC 203L	General Physics I Lab	1
PHSC 204	General Physics II	3
PHSC 204L	General Physics II Lab	1
PHSC 359	Modern Physics	3
PHSC 359L	Modern Physics Lab	1
CHEM 203	General Chemistry I	4
CHEM 203L	General Chemistry I Lab	0
CHEM 204	General Chemistry II	4
CHEM 204L	General Chemistry II Lab	0
MATH 221	Calculus I	4
MATH 221L	Calculus I Lab	0

#### Major Courses (37 credits)

BIOL 310	Introduction to Animal Behavior	3
BIOL 312	Zoología	3
BIOL 312L	Zoología lab	1
BIOL 315	Biostatistics	3
BIOL 318	Parasitología	3
BIOL 320	Microbiology	3
BIOL 320L	Microbiology Lab	1
BIOL 325	General Botany	3
BIOL 325L	General Botany Lab	1
BIOL 329	General Ecology	3
BIOL 329L	General Ecology Lab	1
BIOL 333	Introduction to Marine Biology	3
BIOL 333L	Marine Biology Laboratory	1
BIOL 340	Genetics	3
BIOL 345	Evolution	3
BIOL 350	Biochemistry	3
BIOL 355	Cellular and Molecular Biology	3
BIOL 355L	Cellular and Molecular Biology Laboratory	1
ENSC 499	Fundamental of Environmental Sciences	3

MATH 290	Theory of Numbers	3	MATH 222	Calculus II	4
MATH 222L	Calculus Lab II	0			
MATH 223	Calculus III				4
MATH 305	Probability and Statistics I				3
MATH 350	Linear Algebra				3
MATH 395	Differential Equations				3
CHEM 221	Analytic Chemistry				3
CHEM 221L	Analytic Chemistry Lab	1	CHEM 311	Inorganic Chemistry	3
CHEM 311L	Inorganic Chemistry Lab	1	CHEM 351	Organic Chemistry I	3
CHEM 351L	Organic Chemistry I Lab	1	CHEM 352	Organic Chemistry II	3
CHEM 352L	Organic Chemistry II Lab	1			

CHEM 365 Undergraduate Research in Chemistry I 3  
CHEM 366 Undergraduate Research in Chemistry II 3  
CHEM 390 Spectroscopy 3  
CHEM 430 Instrumental Chemistry 3 CHEM 430L Instrumental Chemistry Lab 1  
CHEM 451 Organic Synthesis 3 CHEM 463 Physical Chemistry I 3 CHEM 463L Physical Chemistry I Lab 1  
CHEM 464 Physical Chemistry II 3 CHEM 464L Physical Chemistry II Lab 1 CHEM 481 Computational Chemistry 3  
MATH 345 Abstract Algebra 3

\*See the curriculum and plan of study at the web page for additional requirements.

**BACHELOR DEGREE IN SCIENCE WITH CONCENTRATION IN BIOLOGY**

This program prepares competent professionals with an integral education in which the student acquires fundamental knowledge in the natural sciences and specializes in biology. During his academic development, the student acquires skills that prepare him to integrate into the labor world, whether in industry, organizations or research; And to continue graduate studies. In addition, this curriculum prepares the student with the fundamental knowledge that a biologist must possess

<b>Total Credits</b>	<b>121</b>
<b>General Education Courses</b>	<b>43</b>
<b>Required Courses in Science &amp; Math</b>	<b>28</b>
<b>Major Courses</b>	<b>32</b>
<b>Major Elective Courses</b>	<b>9-10</b>

ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
GESC 105	Freshman Seminar	3
GESC107	Introduction to Computers for Science Students	3
GESC 264	Introduction to Scientific Research	3
MATH 152	Pre-Calculus	4
MATH 152L	Pre-Calculus Lab	0

**Core Courses (26 credits)**

CHEM 203	General Chemistry I	4
CHEM 203L	General Chemistry I Lab	0
CHEM 204	General Chemistry II	4
CHEM 204L	General Chemistry II Lab	0
CHEM 351	Organic Chemistry I	3
CHEM 351L	Organic Chemistry I Lab	1
CHEM 352	Organic Chemistry II	3
CHEM 352L	Organic Chemistry II Lab	1
PHSC 203	General Physics I	3
PHSC 203L	General Physics I Lab	1
PHSC 204	General Physics II	3
PHSC 204L	General Physics II Lab	1
MATH 221	Calculus I	4
MATH 221L	Calculus I Lab	0

**Major Courses (34 credits)**

BIOL 203	General Biology I	3
BIOL 203L	General Biology I Lab	1
232 BIOL 204	General Biology II	3

BIOL 204L	General Biology II Lab	1
BIOL 315	Biostatistics	3
BIOL 320	Microbiology	3
BIOL 320L	Microbiology Lab	1
BIOL 329	General Ecology	3
BIOL 329L	General Ecology Lab	1
BIOL 340	General Genetics	3
BIOL 345	Evolution	3
BIOL 355	Cellular and Molecular Biology	3
BIOL 355L	Cellular and Molecular Biology Laboratory	1

BIOL 350	Option: Microbiology and Biotechnology	
BIOL 309	Virology	3
BIOL 410	Introduction to Biotechnology	3
BIOL 460	Techniques in Biotechnology	3
CONCENTRATION ELECTIVES		9

Option: Environmental and Evolutionary		
BIOL 312	General Zoology	3
BIOL 312L	General Zoology Lab	1
BIOL 325	General Botany	3
BIOL 325L	General Botany Lab	1
CONCENTRATION ELECTIVES		10

Option: Pre-Medicine		
BIOL 313	Human Anatomy and Physiology	3
BIOL 313L	Human Anatomy and Physiology Lab	1
BIOL 314	Human Anatomy and Physiology II	3
BIOL 314L	Human Anatomy and Physiology Lab II	1
Concentration Electives		10

**Major Elective Courses**

BIOL 307	Neurobiology	3
BIOL 309	Virology	3
BIOL 310	Introduction to Animal Behavior	3
BIOL 312	General Zoology	3
BIOL 312L	General Zoology Lab	1
BIOL 313	Human Anatomy and Physiology	3
BIOL 313L	Human Anatomy and Physiology Lab	1
BIOL 314	Human Biology II	3
BIOL 314L	Human Bioogy Lab II	1
BIOL 317	Bioinformatics	3
BIOL 318	Parasitology	3
BIOL 318L	Parasitology Lab	1
BIOL 321	Food Microbiology	3
BIOL 322	Inmunology	3
BIOL 323	Industrial Microbiology	3
BIOL 325	General Botany	3
BIOL 325L	General Botany Lab	1
BIOL 331	Developmental Biology	3
BIOL 331L	Developmental Biology Laboratory	1
BIOL 333	Introduction to Marine Biology	3
BIOL 333L	Marine Biology Laboratory	1
BIOL 336	Tropical Ecosystem Management	3

**General Education Courses (43 credits)**

BIOL 351	Practical Internship in Biology I	3
BIOL 357	Special Topics in Biology	3
BIOL 365	Research in Biology	3
BIOL 366	Undergraduate Research in Biology II	3
BIOL 410	Introduction to Biotechnology	3
BIOL 430	Biology of Birds	3
BIOL 430L	Biology of Birds Lab	1
BIOL 460	Techniques in Biotechnology	3
BIOL 482	Biodiversity and Conservation	3
CHEM 221	Analytic Chemistry 3	
CHEM 221L	Analytic Chemistry Lab 1	
CHEM 430	Instrumental Chemistry 3	
CHEM 430L	Instrumental Chemistry Lab 1	
ENSC 499	Fundamental of Environmental Sciences	3

**BACHELOR'S DEGREE IN SCIENCE WITH CONCENTRATION IN CHEMISTRY**

The chemistry program prepares students in the analysis and solution of chemical problems. Alumni receive training in the core areas of chemistry with emphasis in academic research. Courses are aligned to the requirements of the American Chemical Society (ACS). Alumni will be able to work at industry, research laboratories, governmental agencies, forensic laboratories and other chemistry-related scenarios.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>37</b>
<b>Required Courses in Science and Math</b>	<b>32</b>
<b>Major Courses</b>	<b>45</b>
<b>Free Elective Courses</b>	<b>6</b>

<b>General Education Courses (37 credits)</b>		
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
MATH 152	Pre-Calculus II	4
MATH 152L	Pre-Calculus II Lab	0
GESC 105	Freshman Seminar	3
GESC107	Introduction to Computers for Science Students	3
SOSC 111	Individual, Community, Government and Social Responsibility I	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3

HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
SPAN 255	Research and Writing	3

**Core Courses (32 credits)**

BIOL 203	General Biology I	3
BIOL 203L	General Biology I Lab	1
BIOL 204	General Biology II	3
BIOL 204L	General Biology II Lab	1
PHSC 203	General Physics I	3
PHSC 203L	General Physics I Lab	1
PHSC 204	General Physics II	3
PHSC 204L	General Physics II Lab	1
PHSC 359	Modern Physics	3
PHSC 359L	Modern Physics Lab	1
MATH 221	Calculus and Analytical Geometry I	4
MATH 221L	Calculus and Analytical Geometry I Lab	0
MATH 222	Calculus and Analytical Geometry II	4
MATH 222L	Calculus and Analytical Geometry II Lab	0
MATH 223	Calculus and Analytical Geometry III	4
MATH 223L	Calculus and Analytical Geometry III Lab	0

**Major Courses (45 credits)**

CHEM 203	General Chemistry I	4
CHEM 203L	General Chemistry I Lab	0
CHEM 204	General Chemistry II	4
CHEM 204L	General Chemistry II Lab	0
CHEM 221	Analytic Chemistry	3
CHEM 221L	Analytic Chemistry Lab	1
CHEM 311	Descriptive Inorganic Chemistry	3
CHEM 311L	Descriptive Inorganic Chemistry Lab	1
CHEM 351	Organic Chemistry I	3
CHEM 351L	Organic Chemistry I Lab	1
CHEM 352	Organic Chemistry II	3
CHEM 352L	Organic Chemistry II Lab	1
CHEM 430	Instrumental Chemistry	3
CHEM 430L	Instrumental Chemistry Lab	1
CHEM 463	Physical Chemistry I	3
CHEM 463L	Physical Chemistry I Lab	1
CHEM 464	Physical Chemistry II	3
CHEM 464L	Physical Chemistry II Lab	1
CHEM 390	Spectroscopy	3
CHEM 385	Biochemistry	3
CHEM 265	Undergraduate Research	3

**Elective Courses in Science (6 credits)**

CHEM 411	Advanced Inorganic Chemistry	3
CHEM 451	Organic Synthesis	3
CHEM 481	Computational Chemistry	3
CHEM 485	Electrochemistry	3
MATH 395	Differential Equations	3
ENCH 358	Environmental Chemistry I	3
ENCH 359	Environmental Chemistry II	3
CHEM 365	Undergraduate Research in Chemistry I	3
CHEM 366	Undergraduate Research in Chemistry II	3
CHEM 475	Preparation for Chemistry Licensing	3

**BACHELOR'S DEGREE IN SCIENCE WITH  
CONCENTRATION IN BIOTECHNOLOGY**

This program allows our students to understand the natural world and obtain knowledge and skills in the different areas of biotechnology. It enables the student to face the challenges of the modern professional world of the country's emerging biotechnology industry. Our students will be able to work in agencies related to the environmental area, research laboratories, industries or school teachers.

<b>Total Credits</b>	<b>121</b>
<b>General Education Courses</b>	<b>43</b>
<b>Core Courses</b>	<b>28</b>
<b>Major Courses</b>	<b>35</b>
<b>Major Elective Courses</b>	<b>15</b>

**General Education Courses (43 credits)**

ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
GESC 105	Freshman Seminar	3
GESC107	Introduction to Computers	
	for Science Students	3
GESC 264	Introduction to Scientific Research	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
SOSC 111	Individual, Community, Government and Social Responsibility I	3
SOSC 112	Individual, Community, Government and Social Responsibility II	3
MATH 152	Pre-Calculus	4
MATH 152L	Pre-Calculus Lab	0

**Core Courses (28 credits)**

PHSC 203	General Physics I	3
PHSC 203L	General Physics I Lab	1
PHSC 204	General Physics II	3
PHSC 204L	General Physics II Lab	1
CHEM 203	General Chemistry I	4
CHEM 203L	General Chemistry I Lab	0
CHEM 204	General Chemistry II	4
CHEM 204L	General Chemistry II Lab	0
CHEM 351	Organic Chemistry I	3
CHEM 351L	Organic Chemistry I Lab	1

CHEM 352	Organic Chemistry II	3
CHEM 352L	Organic Chemistry II Lab	1
MATH 221	Calculus I	4
MATH 221L	Calculus I Lab	0

**Major Courses (35 credits)**

BIOL 203	General Biology I	3
BIOL 203L	General Biology I Lab	1
BIOL 204	General Biology II	3
BIOL 204L	General Biology II Lab	1
BIOL 315	Biostatistics	3
BIOL 320	Microbiology	3
BIOL 320L	Microbiology Lab	1
BIOL 323	Industrial Microbiology	3
BIOL 340	General Genetics	3
BIOL 350	Biochemistry	3
BIOL 355	Cellular and Molecular Biology	3
BIOL 355L	Cellular and Molecular Biology Lab	1
BIOT 410	Introduction to Biotechnology	3
BIOT 450	Bioprocess Engineering	3
BIOT 460	Biotechnology Techniques	3
BIOT 490	Advanced Seminar in Biotechnology	3
BIOL 365	Research in Biotechnology	3
BIOL 367	Basic Biostatistics	3

**Major Elective Courses (15 credits)**

BIOL 309	Virology	3
BIOL 317	Bioinformatics	3
BIOL 321	Food Microbiology	3
BIOL 322	Immunology	3
BIOL 323	Industrial Microbiology	3
BIOT 210	Good Manufacturing Practices Regulations	3
BIOT 240	Validation	3
PHOP 255	Water Purification Treatment	3

**BACHELOR'S DEGREE IN SCIENCE WITH CONCENTRATION IN  
MEDICAL TECHNOLOGY**

The Bachelor of Science with a Major in Medical Technology and a Post Baccalaureate Certificate in Medical Technology is targeted to attract students interested in studying a career that will prepare them to help in the solution of health problems. Physicians base about 70 percent of their diagnosis and treatment decisions on the results of laboratory testing. Graduates from this program will be prepared to work in the clinical laboratories in hospitals and medical centers; pharmaceutical industry in quality control and microbiology labs, research and biotechnology; government crime labs,

accreditation offices, environmental technology, veterinary medicine and lab information systems; humanitarian work in the Peace Corps, Project Hope and medical missionary workers. Many medical technology degree graduates assume positions as laboratory directors and healthcare supervisors.

**Program Requirements:**

- High School transcripts of credits with a grade point average of at least 2.50 on a 4.0 scale • Results of the College Entrance Examination Board (CEEB).
- Students will be evaluated annually.
- Students must complete 109 credits of the first three years, according to the curriculum established by the school.

**Medical Technology Professional Phase:**

- After completing 109 credits (after three years of undergraduate education), students must apply for admission for the professional phase.
- The student must maintain a minimum 2.75 grade point average.
- Students must have passed with a grade of C the following courses: Biology I and II, Human Biology I and II, Microbiology, Immunology, Cellular Biology or Biochemistry, General Chemistry I and II, Analytical Chemistry, Pre-calculus, Calculus I, Physics I and II and Organic Chemistry I y II.
- Students must have a clean record.
- Students must submit the required documentation.
- Students will be responsible for dates and meetings which shall participate for admission to the professional phase.
- Oral interview and an essay to be performed during the evaluation process.
- Three letters of recommendation from science and/or math professors.
- Students will be admitted to the professional stage if they meet the pre-requirements and subject to the assessment of the Evaluation Committee of the School of Natural Science and Technology.
- Whether a student meets the requirements does not guarantee admission to the program.
- Students not admitted to the professional phase, have the option of completing a degree in Biology. They must complete the required courses in the program.

**BACHELOR’S DEGREE IN SCIENCE WITH  
CONCENTRATION IN MEDICAL  
TECHNOLOGY**

<b>Total Credits</b>	<b>155</b>
<b>General Education Courses</b>	<b>43</b>
<b>Core Courses</b>	<b>40</b>
<b>Required Courses in Biology</b>	<b>26</b>
<b>*Specialization Courses</b>	<b>26</b>
<b>Clinical Practice</b>	<b>19</b>

\*The student must have approved 1,040 hours

<b>General Education Courses</b>	<b>(43 credits)</b>	ENGL 152	
Fundamentals of Reading and Writing	3	ENGL 153	
Advanced Communicative English	3	ENGL 231	
Research and Writing	3		
HUMA 111 Civilizations and Universal Culture I	3	HUMA	
112 Civilizations and Universal Culture II	3		
MATH 152 Pre-Calculus	4	MATH 152L Pre-Calculus Lab	0
GESC 105 Freshman Seminar			3
GESC107 Introduction to Computers for Science Students			3
GESC 264 Introduction to Scientific Research	3		
SOSC 111 Individual, Community, Government and Social Responsibility I			3
SOSC 112 Individual, Community, Government and Social Responsibility II			3
SPAN 152 Fundamentals of Reading and Writing			3
SPAN 250 Writing Techniques			3
SPAN 255 Research and Writing			3

<b>Core Courses</b>	<b>(40 credits)</b>		
BIOL 203 General Biology I	3		
BIOL 203L General Biology I Lab	1		
BIOL 204 General Biology II	3		
BIOL 204L General Biology II Lab	1		
PHSC 203 General Physics I	3		
PHSC 203L General Physics I Lab	1		
PHSC 204 General Physics II	3		
PHSC 204L General Physics II Lab	1		
CHEM 203 General Chemistry I	4		
CHEM 203L General Chemistry I Lab	0		
CHEM 204 General Chemistry II	4		
CHEM 204L General Chemistry II Lab	0		
CHEM 221 Analytical Chemistry	3		
CHEM 221L Analytical Chemistry Lab	0		
CHEM 351 Organic Chemistry I	3	CHEM 351L	
Organic Chemistry I Lab	1	CHEM 352	Organic
Chemistry II	3	CHEM 352L	Organic Chemistry II Lab
			1
MATH 221 Calculus I	4	MATH 221L	Calculus I Lab
			0

<b>Biology Courses</b>	<b>(26 credits)</b>
BIOL 303 Human Biology I	3
BIOL 303L Human Biology I Lab	1

BIOL 304	Human Biology II	3
BIOL 304L	Human Biology II Lab	1
BIOL 318	Parasitology	3
BIOL 318L	Parasitology Lab	1
BIOL 320	Microbiology	3
BIOL 320L	Microbiology Lab	1
BIOL 322	Immunology	3
BIOL 340	General Genetics	3
BIOL 350 Or	Biochemistry	3
BIOL 355	Cellular and Molecular Biology	3
BIOL 355L	Cellular and Molecular Biology Lab	1

**Academic Session (26 credits)**

MTEC 400	Introduction to laboratory management, education and bioethics	2
MTEC 401	Clinical laboratory testing instruments and molecular clinical analysis	2
MTEC 402	Clinical Parasitology and Clinical Virology	2
MTEC 404	Clinical Mycology	1
MTEC 406	Clinical Hematology and Hemostasis	4
MTEC 406L	Clinical Hematology and Hemostasis Laboratory	0
MTEC 408	Immunology and Clinical Serology	3
MTEC 408L	Immunology and Clinical Serology Lab	0
MTEC 410	Clinical Chemistry	4
MTEC 412	Urine Analysis and Body Fluids	1
MTEC 414	Clinical Bacteriology	4
MTEC 414L	Clinical Bacteriology Lab	0
MTEC 417	Immunoematology	3
MTEC 417L	Immunoematology Lab	0

**Clinical Practice Session (19 credits)**

MTEC 407	Hematology Practice	4
MTEC 415	Blood Bank Practice	3
MTEC 405	Clinical Microbiology Practice	4
MTEC 403	Parasitology Practice	1
MTEC 411	Clinical Chemistry Practice	4
MTEC 413	Urinalysis Practice	1
MTEC 409	Serology Practice	1
MTEC 416	Seminar I	1

**POST-BACCALAUREATE CERTIFICATE IN MEDICAL TECHNOLOGY**

Students who have begun studies at other institutions need to complete the following requirements:

- Student must have earned a baccalaureate degree in Sciences with a grade point average of at least 2.75.
- Students must have passed with a grade of C the following courses: Biology I and II, Human Biology I and II, Microbiology, Immunology, Cellular Biology or Biochemistry, General Chemistry I and II, Analytical Chemistry, Pre-calculus, Calculus I, Physics I and II and Organic Chemistry I y II.
- Students must have a clean record.
- Students must submit the required documentation.
- Students will be responsible for dates and meetings which shall participate for admission to the professional phase.
- Oral interview and an essay to be performed during the evaluation process.
- Three letters of recommendation from science and/or math professors.
- Students will be admitted to the professional stage if they meet the pre-requirements and subject to the assessment of the Evaluation Committee of the School of Natural Science and Technology.
- Whether a student meets the requirements does not guarantee admission to the program.
- Medical Technology courses from other institutions will not be accepted.

**Graduation Requirements for the Baccalaureate and the Post-Baccalaureate in Medical Technology**

- Students must complete all the courses required for the baccalaureate degree or the post-baccalaureate certificate with a minimum grade point average of 2.75.
- Students should obtain a grade of C or more in core and major courses.

<b>Total Credits</b>	<b>45</b>
<b>Academic Session</b>	<b>26</b>
<b>Clinical Practice Session</b>	<b>19</b>

**Academic Session (26 credits)**

MTEC 400	Introduction to Clinical Laboratory Administration and Bioethics	2
MTEC 401	Clinical Laboratory Instrumentation , Methodologies and Molecular Techniques	2
MTEC 402	Clinical Parasitology and Clinical Virology	2
MTEC 404	Clinical Mycology	1
MTEC 406	Clinical Hematology and Hemostasis	4

MTEC 406L Clinical Hematology and Clinical Hemostasis Laboratory	0
MTEC 408 Clinical Immunology and Clinical Serology	3
MTEC 408L Clinical Immunology and Clinical Serology Laboratory	0
MTEC 410 Clinical Chemistry Lab	4
MTEC 410L Clinical Chemistry Lab	0
MTEC 412 Study and Analysis of Body Fluids and Urine Analysis	1
MTEC 414 Clinical Bacteriology Lab	4
MTEC 414L Clinical Bacteriology Lab	0
MTEC 417 Immunohematology Lab	3
MTEC 417L Immunohematology Lab	0
<b>Clinical Practice Session (19 credits)</b>	The student must have approved 760 hours.
MTEC 407 Clinical Laboratory Practice- Hematology	4
MTEC 415 Clinical Laboratory Practice – Bank of Blood	3
MTEC 405 Clinical Laboratory Practice - Microbiology	4
MTEC 403 Clinical Laboratory Practice- Parasitology	1
MTEC 411 Clinical Laboratory Practice -Clinical Chemistry	4
MTEC 413 Clinical Laboratory Practice -Body Fluids and Urine Analysis	1
MTEC 409 Serology Practice	1
MTEC 416 Clinical Laboratory Practice – Case Studies of Clinical Laboratory	1

**INTEGRATED BACHELOR/MASTER IN SCIENCE IN FOOD TECHNOLOGY AND SAFETY**

The joined BS/MS program in Food Technology and Safety allows students to understand the processes, regulations and science related to the manufacturing of foods and

food preservation. Alumni will be able to work in the food industry or in the government as inspectors or analysts and will be able to make decisions regarding the safety of food products. Students will apply the best available technology in their graduate research to propose solutions to contemporary problems of public health concern.

<b>Total Credits</b>	<b>154</b>
<b>Undergraduate Level</b>	<b>114</b>
<b>General Education</b>	<b>36</b>
<b>Core Courses</b>	<b>40</b>
<b>Concentration Courses</b>	<b>38</b>
<b>Elective Courses</b>	<b>8</b>
<b>Graduate Level</b>	<b>32</b>

**Undergraduate Level 114**  
**General Education Courses (36 credits)**

ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
GESC 105	Freshman Seminar	3
GESC107	Introduction to Computers for Science Students	3
GESC 264	Introduction to Scientific Research	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
SOSC 111	Individual, Community, and Social Responsibility I	3

**Core Courses 40**

BIOL 203	General Biology I	3
BIOL 203L	General Biology I Lab	1
BIOL 204	General Biology II	3
BIOL 204L	General Biology II Lab	1
CHEM 203	General Chemistry I	3
CHEM 203L	General Chemistry I Lab	1
CHEM 204	General Chemistry II	3
CHEM 204L	General Chemistry II Lab	1
CHEM 351	Organic Chemistry I	3
CHEM 351L	Organic Chemistry I Lab	1
CHEM 352	Organic Chemistry II	3
CHEM 352L	Organic Chemistry II Lab	1
MATH 152	Pre-Calculus	4
MATH 152L	Pre-Calculus Lab	0
MATH 221	Calculus I	4

MATH 221L	Calculus I Lab	0
PHSC 203	General Physics I	3
PHSC 203L	General Physics I Lab	1
PHSC 204	General Physics II	3

PHSC 204L	General Physics II Lab	1
<b>Concentration Courses</b>		<b>38</b>
BIOL 315	Biostatistics	3
BIOL 320	Microbiology	3
BIOL 320L	Microbiology Lab	1
BIOL 350	Biochemistry	3
BIOL 321	Food Microbiology	3
BIOL 321L	Laboratory of Food Microbiology	1
BIOL 323	Industrial Microbiology	3
NUTR 201	Introduction to Nutrition	4
FOOD 101	Introduction to Food Technology	3
FOOD 201	Microbial Food Safety Hazards and Quality Control	3
FOOD 250	Food Safety and Protection related to Public Health	3
FOOD 300	Food Laws, Standards & Regulations	4
FOOD 400	Food Biotechnology	3
FOOD 450	Principles of Hazard Analysis and Critical Control Points (HACCP) & Good Manufacturing Practices (GMP)	4
MANA 260	Managerial Strategies	3
<b>Elective Courses</b>		<b>8</b>
<b>Graduate Level Courses*</b>		<b>(32 credits)</b>
CHEM 504	Food Chemistry	3
CHEM 504L	Laboratory of Food Chemistry	1
FOOD 501	Food Safety Toxicology	3
FOOD 581	Graduate Seminar	1
FOOD 603	Comparative Food & Agriculture Systems	3
FOOD 605	Food Safety Disease Control	3
FOOD 606	Food Packaging & Processing	3
FOOD 607	Food Safety Risk Assessment	3
FOOD 611	Quality Management in the Food Industry	3
FOOD 691	Graduate Project I	3
FOOD 692	Graduate Project II	
STAT 505	Statistic Instrument Research OR	3
STAT 755	Experimental Design	3

\*See course descriptions in the Graduate Catalog.

### COURSE DESCRIPTIONS

(Courses marked with @ could be offered in both modalities, traditional or on-line.)

### Applied Microbiology

#### Three Credits

The course emphasizes the fundamental principles of microbiology and the role of microorganisms in industrial processes. Topics to be included are the characteristics, structure, function, and identification, use of the microscope

and staining techniques, isolation of bacteria in pure

cultures, handling cultures of aerobic and anaerobic bacteria, biochemical tests, automatic and semi-automatic techniques to identify bacteria cultures.

#### **BIOL 100L**

##### **Applied Microbiology Laboratory**

##### **One Credit**

Laboratory course aimed at students of the associated degrees programs, in which basic concepts of microorganisms (bacteria, viruses, fungi and protozoa) from its structure and physiology to applications that are currently used will be explore. Students will learn and practice aseptic techniques to handle and manipulate microorganisms, including the use of different equipment such as a microscope, incubators, colony counters, and culture transferring tools. Students will perform staining and other basic techniques for the study of microorganisms at the structural and metabolic level. Also, environmental factors affecting growth and development of microbial populations will be study. All activities are designed taking into account the safety of students and the environment and respecting ethical principles in the handling of microbial cultures.

#### **BIOL 101 (for non-majors)**

##### **Introduction to Biological Science I**

##### **Three Credits**

Study of the basic biological principles, using the levels of biological organization. The course studies the chemical context of life, the structure and function of macromolecules, the cell functionality and the principal metabolic process. The study of the human anatomy and physiology of circulatory, respiratory, digestive and urinary systems are covered.

#### **BIOL 102 (for non-majors)**

##### **Introduction to Biological Science II**

##### **Three Credits**

Second part of the Biological Science course, the study of the human anatomy and physiology of nervous, endocrine and reproductive systems. Also, an overview of animal reproduction and development. The study of Mendelian inheritance and the molecular basis of inheritance. Finally an introduction to ecology, taxonomy and evolution.

#### **BIOL 103 @**

##### **Survey of Biological Sciences**

##### **Three Credits**

Science course that prepares the student to acquire the fundamental concepts of the Biology Science such as: matter characteristics, the cell, introduction to Physiology, Human Anatomy and introduction to genetics. Said course is offered to the Health Science students.

#### **BIOL 200**

##### **Principles of Human Anatomy**

##### **Three Credits**

The course is an introduction to the study of nervous, muscular, and osteoarticular systems. Emphasis is placed on the relationship of these systems to the development of language and speech.

#### **BIOL 203**

##### **General Biology I**

##### **Three Credits**

An introductory survey of current biological concepts for students majoring in the sciences. Emphasis will be placed on topics which include characteristics of living things, scientific method, biologically important compounds and molecules, cells, energy and metabolism, genetics, evolution and ethical aspects related to technology and scientific research.

#### **BIOL 203L**

##### **General Biology I Laboratory**

##### **One Credit**

Laboratory course to accompany BIOL 203. The course is a hands-on experience that enhance the lecture course. Topics studied are the scientific method, organic macromolecules, cytology, cell membrane transport processes, cell cycle, cellular metabolism: photosynthesis, cellular respiration, meiosis, mendelian genetics, molecular genetics and evolution.

#### **BIOL 204**

##### **General Biology II**

##### **Three Credits**

General biology course for natural sciences students. Include the following topics: biodiversity, basic concepts of anatomy and physiology of plants and animals, ecology and ethical aspects related to technology and scientific research.

#### **BIOL 204 L**

##### **General Biology II Laboratory**

##### **One Credit**

Laboratory course to accompany BIOL 204. The course is a hands-on experience that enhance the lecture course. Topics studied are: biodiversity, systematics, compared anatomy and physiology and ecology.

#### **BIOL 230**

##### **Fungi and Mankind**

##### **Three Credits**

The course covers fungi characteristics, diversity, and their impact on humanity. The main focus will be on the

importance of fungi for humans and for ecosystems. In addition, concepts related to the fields of medicine and industry will be discussed.

**BIOL 300**  
**Microbiology for Health Sciences Students**  
**Four Credits**

The course of Microbiology for Health Sciences Students offers an overview of the world of microorganisms and the techniques to study them and focus on the relationship of microorganisms with human beings from the medical perspective. Course topics include the discussion of the basic features of microorganisms (e.g. fungi, algae, bacteria and viruses) and the fundamental concepts of microbiology areas such as: Bacteriology, Mycology, Virology, Parasitology and Immunology. The course emphasizes on pathogenic microorganisms and the diagnosis of infectious diseases. Also ethical issues are discussed and analyzed regarding the management, manipulation of microorganisms and the application of modern techniques to study them and health consequences.

**BIOL 301**  
**Introduction to Food Microbiology**  
**Three Credits**

Introductory microbiology course for students; interested in careers related to human health and the food industry. The course is aimed at students who do not possess a prior course of microbiology. The itinerary begins with the basics in Microbiology (diversity, classification, microbial growth). Be studied also issues aimed at understanding the interaction pathogen-host as: microorganisms with pathogenic potential, normal microflora, epidemiology, immunology and diseases. The course will be study issues related to the microorganisms of importance in the food (food spoilage, fermented foods and other products of microbial origin), regulations, practical problems and bioethics of the food industry. The course will analyze how microorganisms impact human health and the quality of the food using a practical approach with application to daily life and to the future profession of the student.

**BIOL303**  
**Human Biology I**  
**Three Credits**

The course integrates the study of the structure of the human organism, its development and histology, with the function of organs and systems. Also, issues related to health are discussed. Study of cellular concepts, histological structures, and of osteoarticular, muscle and nerve systems; emphasizing the value of life, human dignity, respect, integrity, justice and responsibility of every human being.

**BIOL 303 L**  
**Human Biology Laboratory I**  
**One Credit**

The laboratory experiments were design to enable students to learn human anatomy and physiology in a whole manner. Each laboratory experience and other activities were chosen to encourage students to think for themselves, take initiative and be responsible in their work. Focus in the ethics principles involved in the study of human biology.

**BIOL 304**  
**Human Biology II**  
**Three Credits**

The course integrates the study of the structure of the human organism, its development and histology, with the function of organs and systems. Also, issues related to health are discussed. Emphasis in sensorial organs and endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary and reproductor system.; emphasizing the value of life, human dignity, respect, integrity, justice and responsibility of every human being.

**BIOL 304 L**  
**Human Biology Laboratory II**  
**One Credit**

The laboratory experiments were design to enable students to learn human anatomy and physiology in a whole manner. Each laboratory experience and other activities were chosen to encourage students to think for themselves, take initiative and be responsible in their work. Focus in the ethics principles involved in the study of human biology.

**BIOL 307**  
**Neurobiology**  
**Three Credits**

This course is an introduction to the organization and function of the nervous system. Focuses on neuroanatomy, cellular organization and the basic organization of the brain into neural systems.

**BIOL 310**  
**Introduction to Animal Behavior**  
**Three Credits**

Introduction to animal behavior, emphasizing the evolution, neurophysiology, genetic, ecology, behavioral development, as well as behavioral patterns, mechanisms, functions and learning processes related to behavior and human ethology. It will discuss some aspects of the correct scientific and ethical use of experimental animals.

**BIOL 312**

## **Zoology**

### **Three Credits**

Study of different animals groups with emphasis on taxonomy, morphology, physiology, ecology, evolution and an integrated ethical vision.

## **BIOL 312 L**

### **Zoology Laboratory**

#### **One Credit**

Laboratory exercises will consist of an overview of animal characteristics, surveys of diversity within animal groups and dissections of representatives of the major animal groups.

## **BIOL 313**

### **Human Anatomy and Physiology**

#### **Three Credits**

The course integrates the study of the structure of the human organism, its development and histology, with the function of organs and systems. Also, issues related to health are discussed. Study of cellular concepts, histological structures, and osteoarticular, muscle and nerve systems; emphasizing the value of life, human dignity, respect, integrity, justice and responsibility of every human being. This course is designed primarily for students majoring in natural sciences professions, pre medical, pre odontology etc.

## **BIOL 313L**

### **Human Anatomy and Physiology Lab**

#### **Three Credits**

The laboratory provides the opportunity to learn the structure of the human body, its development and histology, besides the functioning of organs and systems. The laboratory will provide an enriching experience and a valuable opportunity to reinforce the knowledge that will implement in a professional level. Upon completion students will understand how the anatomy and physiology of the human body work together. Besides the laboratory course focuses students in Human Biology I to value life, human dignity, respect, integrity, justice and responsibility of every human being.

## **BIOL 314**

### **Human Anatomy and Physiology II**

#### **Three Credits**

The course integrates the study of the structure of the human organism, its development and histology with the function of organs and systems and how they work together. Health-related issues are discussed. Endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary and reproductive systems are discussed, emphasizing the

importance to value life, human dignity, respect, integrity, justice and responsibility of every human being. This course is designed primarily for students majoring in natural sciences professions, pre medical, pre odontology etc.

## **BIOL 314L**

### **Human Anatomy and Physiology II Lab**

#### **One Credits**

This laboratory course provides experiences that allow students to understand the concepts of human anatomy and physiology of the various systems such as the endocrine, cardiovascular, respiratory, digestive, urinary and reproductive. Includes histology and dissection of components of each system. Laboratory exercises allow the development of skills in the use of equipment, interpretation of results and show the relationship between anatomy and human physiology. Laboratory work includes observation, dissection, microscopy and experimental demonstrations of concepts discussed in class. Focuses students to value life, human dignity, respect, integrity, justice and responsibility of every human being.

## **BIOL 315**

### **Biostatistics**

#### **Three Credits**

Introduction to the study of data collection, data grouping, data analyses and interpretation of biological data. Understanding of basic probability concepts and probabilistic distribution. Understanding of fundamental statistical tools for the construction of graphs and tables. Understanding of key concepts such as central tendency parameters, dispersion parameters, hypothesis development, types of hypotheses, types of error in hypothesis decision, hypothesis testing.

## **BIOL 317**

### **Bioinformatics**

#### **Three Credits**

A practical "hands-on" course in Bioinformatics that will emphasize how to use computers and the web, as tools to analyze and represent large collections of biological sequence and structure data.

## **BIOL 318**

### **Parasitology**

#### **Four Credits**

Introduction to parasitology studying aspects of taxonomy, ecology, evolution, clinical and epidemiology of parasites important to humans. The course pretends to cover general

parasitology, but taking into special account those parasites prevalent in the Caribbean, most specifically in Puerto Rico and to the ethical principles that guide the technical practices for the study of parasites.

**BIOL 320**  
**Microbiology**  
**Three Credits**

General microbiology course is aimed at students of biology and General Science interested in learning about the microbial world. In this introductory course students will study the morphology, taxonomy, ecology and the fundamental characteristics of microorganisms (e.g. bacteria, fungi, algae, protozoa and viruses) physiology. It also explores the basic techniques of enrichment, selection, isolation, enumeration and identification of microorganisms. The course not only discusses the ability of microorganisms to cause diseases, but also highlights its role in research, the ecosystem and the economy. Also, ethical issues will be discussed and analyzed regarding the management, handling of microorganisms and the application of modern techniques and their impact on health, the environment and the economy. Three hours of lecture and four hours of laboratory per week.

**BIOL 320L**  
**Microbiology Laboratory**  
**One Credit**

Laboratory experiences which address topics including sterile technique, microscopy, identification of microorganisms, microbial metabolism.

**BIOL 321**  
**Food Microbiology**  
**Three Credits**

The course discusses the physical and chemical factors affecting the microbiology of food such as pH, activity of water, oxidation-reduction potential and nutrients. The course studies the different groups of microorganisms such as: fungi, bacteria and viruses and the interaction of these with food (e.g. grain, red meat, beef and chicken, seafood, vegetables and dairy products). Selected topics of the course are aimed to understand how pathogens cause disease, how food poisoning is transmitted and how can it be controlled. The course emphasized the industrial aspect and the role of microorganisms in the manufacture of foods such as bread, dairy products, alcoholic beverages, etc. Current food microbial issues related to food preservation and safety regulations are discussed in the course. During the course students will explore and analyze ethical issues related to the management and manipulation of microorganisms with a

special interest in the manufacture of food, public health, microbiological sanitation and future challenges.

**BIOL 321L**  
**Laboratory of Food Microbiology**  
**One Credits**

The laboratory of food microbiology is designed for biology students interested in microbiology and the food industry. The student must have basic knowledge of microbiology, metabolism and organic chemistry. In conjunction the class and the laboratory course will allow the student becomes familiar with the microbiology from a practical point of view related to their professional interests. All activities are designed to develop to the fullest the capabilities of the student in: the use of the scientific method to solve problems, work in group, ethics, organization, interpretation and analysis of the obtained data. The laboratory experiments will arouse the interest of the students in this branch of Microbiology discussing: basic techniques in Microbiology (microscopy, isolation and manipulation of microorganisms), identification of microorganisms, chemical and physical parameters affecting microbial growth, description of metabolic capabilities, food spoilage, preparation of foods and fermented beverages, distinction between microorganisms with pathogenic capacity, isolation of microorganisms from different food products.

**BIOL 322**  
**Immunology**  
**Four Credits**

In the Immunology course fundamental concepts are discussed in which historical, evolutionary, cytological, anatomical, physiological and clinical aspects of immunology are explore. The course examines how the body responds and what are the immunological mechanisms employed against the infections by bacteria, viruses, and other foreign materials. Also, aspects about cellular mediating immunity in health and diseases are discussed. The topics in the course cover fundamental aspects of molecular and cellular immunology areas and present applications and technologies used in modern medicine. The course raises ethical issues related to the implementation and development of technologies for the control of infections and invasions of hazardous biological agents and other foreign materials.

**BIOL 323**  
**Industrial Microbiology**  
**Four Credits**

This courses deals with the use of microorganisms in industry, particularly in the manufacture and quality control of different pharmaceutical products. It also provides the

student with an introduction to bioprocess, regulations, GMP, and GLP.

### **BIOL 325**

#### **Botany**

#### **Three Credits**

The General Botany course presents basic concepts of plant biology focusing on the structure, function, reproduction and evolution of plants. Issues related to the role of plants in the environment and human activities will also be discussed. During the course students will discuss issues and current ideas on plants and agriculture, horticulture, medicine, biotechnology, ecology, conservation and environmental issues. Students will identify and analyze ethical concerns about the consequences of scientific research, the protection of plant diversity and its habitats in the development of life and the environment.

### **BIOL 325 L**

#### **Botany Laboratory**

#### **One Credit**

Observation and study of cyanobacteria, algae, fungi and plants with emphasis in angiosperms.

### **BIOL 329**

#### **General Ecology**

#### **Four Credits**

This course provides a comprehensive introduction to the contemporary science of ecology - the study of the relationships between organisms and their biotic and abiotic environments. The course provides students with experience in research study design, data collection and analysis and addresses theoretical and applied questions central to contemporary ecology at the level of the individual, population, community and ecosystem, with interpretation through an evolutionary perspective. Additional emphasis is placed on the ecological habitats of Puerto Rico and contemporary issues in conservation biology locally and world-wide.

### **BIOL 329 L**

#### **General Ecology Laboratory**

#### **One Credit**

The course addresses theoretical and applied questions central to contemporary ecology through a combination of laboratory and field studies, at the level of the individual, population, community and ecosystem, with interpretation through an evolutionary perspective. Additional emphasis is placed on the ecological habitats of Puerto Rico and contemporary issues in conservation biology locally and world-wide. Duration of the course is approximately fifteen weeks (45 hours). Three hours of laboratory and/or field

exercises per week will address the factors influencing the abundance and distribution of living organisms.

### **BIOL 331**

#### **Developmental Biology**

#### **Three Credits**

The study of the organismal, cellular and molecular aspects of animal and plant development.

### **BIOL 331L**

#### **Developmental Biology Laboratory**

#### **One Credit**

A hands-on approach study of animal and plant development that will help students to remember and to understand the theory and principles taught in the lecture course.

### **BIOL 332**

#### **Human Embryology**

#### **Three Credits**

Study of pre-natal normal development from the fertilized egg to a multicellular entity. Also includes the origin and causes of embryo malformations.

### **BIOL 332L**

#### **Human Embryology Laboratory**

#### **One Credit**

A hands-on approach study of animal and plant development will help students to remember and to understand the theory and principles taught in the lecture course.

### **BIOL 333**

#### **Introduction to Marine Biology**

#### **Four Credits**

Study of the biology of marine plants and animals, and the relationship with the environment. Introduction to the study of marine provinces and coastal ecosystems of Puerto Rico and the world, promoting the ethical principles. Three hours of lecture and a three-hour laboratory per week.

### **BIOL 333L**

#### **Marine Biology Laboratory**

#### **One Credit**

Study of the biology of marine plants and animals, and the relationship with the environment. Introduction to the study of marine provinces and coastal ecosystems of Puerto Rico and the world.

### **BIOL 335**

#### **Biodiversity and Conservation**

### **Three Credits**

The course examines the genetic and ecological principles and the concepts of island biogeography as they relate to endangered species conservation, the management of small populations and the value of protected areas. Strong emphasis is placed on sociological, economic and political components of species conservation.

### **BIOL 336**

#### **Tropical Ecosystem Management**

#### **Three Credits**

Fundamental concepts about natural resources conservation and management within the scenario of the ecosystems of Puerto Rico. The course will emphasize environmental problems associated to pollution, urban sprawling, energy provision, and collective indolence. The sustainable development paradigm will be analyzed.

### **BIOL 340**

#### **Genetics**

#### **Four Credits**

The course deals with principles of heredity with emphasis on structure of genetic material, mechanism of transmission, cytonetics, evolution, and population genetics.

### **BIOL 345**

#### **Evolution**

#### **Three Credits**

Introduction of living things evolution, focusing on genetic basis of evolution, genetic variation, reconstruction of phylogeny, natural selection, origin of species, geological history, human, cultural and future evolution and intervention of modern technologies in the evolutionary processes. Discussion of present and future ethical conflicts in the evolution direction.

### **BIOL 347**

#### **Diagnosis and Control of Food Plant Diseases**

#### **Four Credits**

The course centers on the study of methods and techniques used in the diagnosis and control of diseases of tropical food plants. The identification to genera and sometimes to species of plant pathogens will be conducted using symptoms and signs under field conditions, as well as through microscopic observations and the use of taxonomic keys in the laboratory. Special attention will be devoted to control measures for important plant diseases. One hour of lecture and six hours of laboratory per week.

### **BIOL 349**

#### **Pathology of Food Plants**

#### **Four Credits**

The course centers on the study of diseases of food plants. Emphasis will be placed on diseases of tropical food plants; their hosts, symptomatology, etiology, disease cycle, epiphytology, distribution, economic importance and control. Three hours of lecture and three hours of laboratory per week.

### **BIOL 350**

#### **Biochemistry**

#### **Three Credits**

The course covers the chemistry and metabolism of organic molecules and their relation to the regulation and processes of organisms, cells, and sub-cellular components.

### **BIOL 351**

#### **Practical Internship in Biology I**

#### **Three Credits**

The course is a practical internship in another university institution, private industry, or government agency. A minimum of sixty (60) hours is required.

### **BIOL 352**

#### **Practical Internship in Biology II**

#### **Three Credits**

The course is a practical internship in another university institution, private industry or government agency. A minimum of sixty (60) hours in required.

### **BIOL 355**

#### **Cellular and Molecular Biology**

#### **Three Credits**

The basic properties of cells, organelles and molecules that determine their structures and functions are discussed. Also examines the properties of the system of differentiated cells and tissues. Students are introduced to important issues related to cell biology, microbiology, biochemistry, genetics and biotechnology. During the course students will identify and analyze ethical problems related to research and application of modern techniques in molecular and cellular biology.

### **BIOL 355L**

#### **Cellular and Molecular Biology Laboratory**

#### **One Credit**

Students will be introduced to current molecular and cellular biology procedures in a hands-on environment. Each laboratory experience and other activities have been chosen to encourage students to think for themselves, take initiative and be responsible in their work as part of ethical principles. Emphasis will be placed on developing good laboratory practices, including critical thinking, proper technique, data record-keeping, and scientific writing. Different practical

approaches such as cellular growth, plasmid DNA isolation, and restriction digest analysis, proteins analysis, DNA cloning, and DNA fingerprinting using the polymerase chain reaction (PCR) will be explored.

### **BIOL 357**

#### **Special Topics in Biology**

##### **Three Credits**

The course centers on discussion of topics in modern biology. A topic will be discussed each semester, using recent scientific publications. Topics may include Biotechnology, Conservation Biology, Biodiversity, Applied Microbiology, and Applied Ecology, among others.

### **BIOL 365**

#### **Undergraduate Research in Biology I**

##### **Three Credits**

During the course of Undergraduate Research students will learn the basic concepts of biology research using the scientific method. The course provides the opportunity for the students to play an active role in developing a project plan, gathering relevant information, organizing and synthesizing information to answer the research questions posed, interpreting the implications of the information generated by the research, applying generated information in practice and disseminating results. These activities will be undertaken through the learning of basic laboratory techniques, as well as the compilation and analysis of scientific information. During the course students may address ethical issues that are aimed to create a responsible conduct in research. The work schedule should last one semester, and should not exceed nine (9) hours per week.

### **BIOL 366**

#### **Undergraduate Research in Biology II**

##### **Three Credits**

The course is a continuation of scientific laboratory and/or field research. The weekly schedule will be agreed upon by each student and the professor chosen to supervise the research. The work schedule should not exceed nine (9) hours per week and should last one semester.

### **BIOL 367**

#### **Basic Biostatistics**

##### **Three Credits**

The course is a study of biological data collection, grouping, analysis, and interpretation. Students will understand fundamental statistics techniques for table and graph presentations, measures of central tendency and dispersion, probability distribution, experimental design hypothesis testing, linear regression and contingency test. They will also

practice the application of a computer package to perform analyses. Each student will be required to select and analyze real life science data for a project.

### **BIOL 410**

#### **Introduction to Biotechnology**

##### **Three Credits**

The course is intended primarily for senior undergraduate students. It provides an overview of industrial biotechnology and will include lab safety, ethical aspects, and documentation.

### **BIOL 430**

#### **Biology of Birds (Ornithology)**

##### **Three Credits**

The biology of birds, including their functional morphology, physiology, behavior, ecology, biogeography, evolution, taxonomy, natural history and conservation, with emphasis on New World families, including the study of bird internal anatomy and external morphology, ecology and behavior, as well as taxonomy and field identification. Independent projects emphasize research skills.

### **BIOL 430L**

#### **Biology of Birds (Ornithology) Lab**

##### **One Credits**

Laboratory and field component for the study of the biology of birds, including their functional morphology, physiology, behavior, ecology, biogeography, evolution, taxonomy, natural history and conservation, with emphasis on New World families. The laboratory includes examination of bird internal anatomy and external morphology, ecology and behavior, as well as taxonomy and field identification. Independent projects emphasize research skills.

### **BIOL 460**

#### **Techniques in Biotechnology**

##### **Three Credits**

The course will provide the students with general concepts and procedures employed in a Biotechnology laboratory. Emphasis in the procedures and equipment used to separate, purify and quantify biological molecules (proteins, lipids, and nucleic acids) using hands-on experiences. Some of the techniques are: spectrophotometry, electrophoresis, chromatography, PCR, cloning, ELISA, and sequencing.

### **BIOL 482**

#### **Biodiversity and conservation**

### **Three Credits**

The course examines the genetic and ecological principles and the concepts of island biogeography as they relate to endangered species conservation, the management of small populations and the value of protected areas. Strong emphasis is placed on sociological, economic and political components of species conservation.

### **BIOT 101**

#### **Introduction to Biotechnology Industry**

### **Three Credits**

This course provides an overview of industrial biotechnology, pharmaceutical technology, agro-technology and chemical processes. In addition, the course will include laboratory safety and documentation.

### **BIOT 103**

#### **Cell and Molecular Biology for Biotechnology**

### **Three Credits**

Basic course in the Biotechnology specialization that prepares the students with the basic knowledge in cell and molecular biology. The course studies from the structure of important organic and inorganic molecules found in living organisms to the types of cells and their metabolic functions. The student will be trained in the laboratory with the necessary skills and techniques to study biology.

### **BIOT 103L**

#### **Cell and Molecular Biology for Biotechnology Lab**

### **One Credit**

The student will be trained in the laboratory with the necessary skills and techniques to study cell and molecular biology, applied to biotechnology.

### **BIOT 210**

#### **Regulations And Good Manufacturing Practices**

### **Three Credits**

This course covers in general the current regulations that apply to Puerto Rico including overview of OSHA, PROSHA, and EPA/EQB with major focus on FDA rules and regulations. Course emphasis will be on Good Manufacturing Practices (cGMP's), quality awareness, record integrity, safety, recall cases, liabilities and basics in auditing documentation, 483's, business impact in dollars and jobs.

### **BIOT 231**

#### **General Manufacturing Biotechnology I**

### **Three Credits**

This course covers the basic principles and experiences related to cell culture, sterilization, media preparation and recovery.

### **BIOT 231L**

#### **General Manufacturing Biotechnology I Lab**

### **One Credit**

This laboratory is a practical complement of the course General Manufacturing Biotechnology I where experiences in the manipulation of cell cultures are presented, the growth-influencing factors, quality control measures in the manufacturing processes, cleaning protocols, hygiene and sterilization, documentation and practical applications of bioinformatics. Activities will be conducted in a weekly three hours period.

### **BIOT 240**

#### **Validation**

### **Three Credits**

The course provides an introduction to the topics of installation qualification, operational qualification, performance qualification, process qualification, cleaning validation, sterilizing filter validation, SPC and continuous process validation, validation testing, preventive maintenance and principles of metrology. Laboratory validation project is included in the course.

### **BIOT 250**

#### **General Manufacturing Biotechnology II**

### **Three Credits**

This course covers the basic principles and experiences related to cell culture, microbes, fermentation, production, recovery, and packaging.

### **BIOT 250L**

#### **Manufacturing Biotechnology Laboratory II**

### **One Credit**

The course complements the General Manufacturing Biotechnology II course where experiences in the management of cell cultures will be presented, factors that affect their growth, quality control measures in manufacturing, cleaning protocols, hygiene and sterilization, document management and bioinformatics applications. Activities will be done using 3 hours periods of laboratory work per week.

### **BIOT 365**

#### **Research in Biotechnology I**

### **Three Credits**

The course provides the opportunity for the students to play an active role in developing a project plan, gathering relevant information, organizing and synthesizing information to answer the research questions posed, interpreting the implications of the information generated by the research, applying generated information in practice and

disseminating results. These activities will be undertaken through the learning of basic laboratory techniques, as well as the compilation and analysis of scientific information. During the course students may address ethical issues that are aimed to create a responsible conduct in research.

#### **BIOT 366**

##### **Research in Biotechnology II**

##### **Three Credits**

The course emphasized in an independent research supervised by a mentor.

#### **BIOT 410**

##### **Introduction to Biotechnology**

##### **Three Credits**

This course is designed to introduce students to methodologies and approaches in the biotechnology industry. The course focuses on the scientific principles and the applications of microbiology, cell biology, immunology, and molecular biology in the medical, pharmaceutical, chemical, and agricultural industries.

#### **BIOT 450**

##### **Bioprocess Engineering**

##### **Three Credits**

Topics to be covered include: basic instruction in plant design and support equipment in industrial biotechnology, general building design, water systems, HVAC, steam generators for sterilization, and biowaste decontamination systems.

#### **BIOT 460**

##### **Biotechnology Techniques**

##### **One Credit**

The course will provide the students with general concepts and procedures employed in a Biotechnology laboratory. Emphasis in the procedures and equipment used to separate, purify and quantify biological molecules (proteins, lipids, and nucleic acids) using hands-on experiences. Some of the techniques are: spectrophotometry, electrophoresis, chromatography, PCR, cloning, ELISA, and sequencing.

#### **CHEM 101**

##### **Applied Chemistry**

##### **Four Credits**

The class is designed to provide students with a general knowledge of matter, chemical compounds and molecules, gases and solutions, preparation of solutions and dilutions, solubility, density, colligative properties, acids and bases and

in general the main inorganic and organic chemical processes used in industry. This course will complement the student's knowledge by using modern laboratory techniques including measurements of pH and conductivity, UV-visible and fluorescence spectroscopy.

#### **CHEM 101L**

##### **Applied Chemistry Lab**

##### **One Credit**

Introductory laboratory to chemistry where the following topics are covered: matter, pure substances, mixtures, periodic table, chemical separations, chemical reactions, calorimetry, kinetics, physical and chemical properties, states of matter. The laboratory will strengthen the basic volumetric, measurement and use of basic equipment techniques and skills, as long as safety rules.

#### **CHEM 203**

##### **General Chemistry I**

##### **Four Credits**

Emphasis in this course is aimed to the study of the states of the matter, atomic and molecular structures, and nomenclature of inorganic compounds, classification of elements in the periodic table, chemical bond, chemical equations and reactions, stoichiometry. In the laboratory students are trained in the use of basic laboratory techniques such as the use of volumetric equipment, titration and qualitative analysis. Students are taught to keep a good laboratory notebook and safety on the laboratory.

#### **CHEM 203L**

##### **General Chemistry I Laboratory**

##### **Zero Credits**

General Chemistry Laboratory I with emphasis on the phenomenological description of matter, properties and changes of pure substances and mixtures, solutions, calorimetry, gases and chemical reactivity. Filtration and titration techniques are studied. Also, the laboratory works with dimensional analysis, chemical nomenclature and proper ethical scientific documentation.

#### **CHEM 204**

##### **General Chemistry II**

##### **Four Credits**

Emphasis in this course is aimed to the study of intermolecular forces, properties of solids and liquids, solutions: types and properties, way to express concentration of solutions, chemical kinetics, chemical equilibrium, acid-base reactions, thermodynamics and electrochemistry including discussion of oxidation-reduction reactions. In the laboratory students are trained in the use of basic laboratory techniques such as the use of volumetric equipment, titration and qualitative analysis. Students are

taught to keep a good laboratory notebook and safety on the laboratory.

#### **CHEM 204L**

##### **General Chemistry II Laboratory**

##### **Cero Credits**

This course provides to the student a complement for general overview of the basic concepts of General Chemistry at experimental level. As a continuation course, the material here discussed is within the context of the conference course General Chemistry II. The laboratory presents to the student the opportunity for analyzing periodical relationships on the main groups chemical elements, activity series of metals, molecular structures (Lewis structures) and relate them with the concept of molecular geometry. The students will have also hands on manipulation of the concept of chemical solutions, concentration units, colligative properties of solutions, volumetric and potentiometric titrations, studying the kinetics of of a chemical reaction, the concept of chemical equilibrium (Le Chatelier's Principle), solubility product, electrochemical cells, and Nerst's equation.

#### **CHEM 221**

##### **Analytical Chemistry**

##### **Three Credits**

Principles of quantitative analysis. Material presented includes gravimetric, volumetric, spectrophotometric and electrochemical methods of analysis. Separation techniques including chromatography are discussed. Statistical analysis of data is discussed. Theoretical explanations of neutralization (acid-base), solubility of precipitates, reactions of complex formations, oxi-reduction reactions, spectroscopy, and graphical methods to visualize the chemistry involved are emphasized.

#### **CHEM 221L**

##### **Analytical Chemistry Laboratory**

##### **One Credit**

Principles of experimental analysis. Material presented includes the methods most widely used in gravimetry, volumetry, spectrophotometry and electrochemistry. Separation techniques including chromatography are used along this course. Statistical analysis of data is also used and applied in the different chemical reactions studied (neutralization, solubility of precipitates, reactions of complex formation, oxi-reduction reactions and spectroscopy).

#### **CHEM 224**

##### **Fundamentals of General Chemistry**

##### **Three Credits**

Study of the principles of General Chemistry designed for students of health related professions. The course includes topics about measurement systems, matter and energy, chemical reactions, atomic and molecular structure, chemical bonds, radioactivity, stoichiometry, solutions, liquid and gas states, chemical equilibrium, chemical kinetics, acids and bases.

#### **CHEM 224L**

##### **Laboratory of Fundamentals of General Chemistry**

##### **One Credit**

The knowledge of this course contribute to that the student interprets and verifies the main definitions, laws and theories of the general chemistry (matter, properties of matter, elements and compounds, chemical reactions, solutions, acids and bases, and radiations) and in its practical application. Also to dominate the main experimental techniques and the work with the measuring instruments and to develop experimental skills that allows him to acquire new knowledge.

#### **CHEM 225**

##### **Fundamentals of Organic and Biological Chemistry**

##### **Three Credits**

Study of the principles of Organic and Biological Chemistry designed for students of health related professions. The course includes topics about structure and reactions of saturated organic compounds: alkanes, cycloalkanes and haloalkanes. Structure and reactions of unsaturated compounds: alkenes, alkynes and dienes. Stereochemistry. Structure and reactions of aromatic compounds. Structure and reactions of organic compounds containing oxygen, nitrogen and sulfur: alcohols, ethers, aldehydes and ketones, carboxylic acids, amines, amides, sulfur compounds and thiols. Structure and functions of lipids, aminoacids, proteins, enzymes and nucleic acids. Metabolic pathways and energy production.

#### **CHEM 225L**

##### **Laboratory of Fundamentals of Organic and Biological Chemistry**

##### **One Credit**

This course provides to the student a complement for general overview of the basic concepts of organic molecules at structural level, general physical and chemical properties of organic molecules are observed and compared with properties of inorganic compounds. The chemical and physical properties of organic molecules possessing different functional groups are discussed at experimental level; these functional groups include alkanes, alkenes, alcohols, carbonyl compounds, and some biomolecules containing these functional groups such as carbohydrates and lipids.

The concept of chemical synthesis is introduced through the preparation of the common analgesic acetylsalicylic acid (aspirin), and the preparation of soap using several triacylglycerides.

### **CHEM 311**

#### **Descriptive Inorganic Chemistry**

##### **Three Credits**

Study of the chemistry of all of the elements and their compounds, based on the discussion of their structures. The formation of the different types of bondings is discussed from the point of view of the Molecular Orbital and Valence Shell theories. The concept of symmetry and point group are introduced and applied to the molecular geometry, and vibrational spectra of inorganic compounds. The physical and chemical properties associated with the electronic configuration of atoms and molecules are studied. The elements and their compounds are described by families, generalizing and explaining their periodic tendencies. The electronic structure, bonding, as well as the spectroscopic and magnetic properties of the transition elements are discussed, along with their applications to other systems.

### **CHEM 311L**

#### **Inorganic Chemistry Laboratory**

##### **One Credit**

This course provides to the student a complement for general overview of the fundamentals concepts of Inorganic Chemistry at experimental level. The knowledge of this course contribute to that the student interprets and verifies the main definitions, laws and theories of the inorganic chemistry providing him with laboratory experiences in which the use of modern techniques for the synthesis of inorganic materials, the separation and purification techniques, as well as the instrumental techniques more commonly used in inorganic chemistry are introduced. It also allows students to dominate the main experimental techniques and the work with the measuring instruments and to develop experimental skills that allow him to acquire new knowledge.

### **CHEM 351**

#### **Organic Chemistry I**

##### **Three Credits**

The Organic chemistry course studies the carbon and hydrogen compounds and its derivatives with others heteroatom such as: halogens, oxygen, nitrogen, sulfur, phosphorus and some metals. This course discusses the nomenclature and physical properties of the different families of organic compounds. The synthetic methods and the reactions of the alkanes, alkenes, cycloalkanes, alkynes, dienes, alkyl halides, aromatic compounds, and derivatives

are also presented. Emphasis is done the reactions mechanisms, specially: SN1, SN2, E-1, E-2, double and triple bonds additions, electrophilic aromatic substitutions in benzene and its derivatives, alcohols dehydration, aldol condensation, Cannizzaro reaction, epoxidation of alkenes, Sandmeyer reaction and Cope and Hofmann amines elimination.

### **CHEM 351L**

#### **Organic Chemistry I Laboratory**

##### **One Credit**

This course will teach the student the basic technique use in an organic laboratory, such as purification, separation and characterization of organic compounds using their physical constants. The student will be trained in the correct use of the different equipments and glassware use in an organic chemistry laboratory. He will also carry out the synthesis of organic compounds with a variety of functional groups related to those discuss in the chemistry 351 class session.

### **CHEM 352**

#### **Organic Chemistry II**

##### **Three Credits**

The Organic chemistry course studies the carbon and hydrogen compounds and its derivatives with others heteroatom such as: halogens, oxygen, nitrogen, sulfur, phosphorus and some metals. This course discusses the nomenclature and physical properties of the different families of organic compounds. The synthetic methods and the reactions of the alkanes, alkenes, cycloalkanes, alkynes, dienes, alkyl halides, aromatic compounds, and derivatives are also presented. Emphasis is done the reactions mechanisms, specially: SN1, SN2, E-1, E-2, double and triple bonds additions, electrophilic aromatic substitutions in benzene and its derivatives, alcohols dehydration, aldol condensation, Cannizzaro reaction, epoxidation of alkenes, Sandmeyer reaction and Cope and Hofmann amines elimination. With respect to the compound structure, the course discusses the structural, geometrical and optical isomerism, emphasizing the conditions that have to be fulfilled for them to exist. The spectroscopic method of analysis and identification of functional group and structure assignment are discussed. Specifically IR, UV, NMR and MS spectroscopy.

### **CHEM 352L**

#### **Organic Chemistry II Laboratory**

##### **One Credit**

This laboratory course emphasizes the synthesis of different functional groups discuss in the Organic Chemistry course 352. Through these reactions the student can understand better the reactions discuss in class and the specific reagents and conditions required in each case. In this laboratory

session two spectroscopic methods are discussed: Infrared and Nuclear Magnetic Resonance spectroscopy and its importance in the structure determination and the presence of organic functional groups.

#### **CHEM 355**

##### **Practical Internship in Chemistry I**

##### **Three Credits**

Practical internship in another university institution, private industry or government agency. A minimum of sixty (60) hours is required.

#### **CHEM 356**

##### **Practical Internship in Chemistry II**

##### **Three Credits**

The course is a practical internship in another university institution, private industry or government agency. A minimum of sixty (60) hours is required.

#### **CHEM 365**

##### **Undergraduate Research in Chemistry I**

##### **Three Credits**

This is a scientific laboratory and/or field research. The weekly schedule will be agreed upon by each student and the professor chosen to supervise research. The work schedule should not exceed nine (9) hours per week and should last one semester.

#### **CHEM 366**

##### **Undergraduate Research in Chemistry II**

##### **Three Credits**

This is a scientific laboratory and/or field research. The weekly schedule will be agreed upon by each student and the professor chosen to supervise research. The work schedule should not exceed nine (9) hours per week and should last one semester.

#### **CHEM 383-384**

##### **General Biochemistry I and II**

##### **Eight Credits**

The course deals with basic concepts of thermodynamics and their biochemical applications. It includes systematic discussion of biological macromolecules, such as proteins, enzymes, nucleic acids, carbohydrates and lipids structure, characterization, physical properties and methods of isolation. The pathways for the degradation and biosynthesis of the major classes of biological molecules will be discussed. The bioenergetic aspect of metabolism will be discussed first within the context of the whole catabolism and anabolism, the individual pathway, and enzymatic reactions. Three hours of lecture and three hours of laboratory per week.

#### **CHEM 385**

##### **General Biochemistry**

##### **Three credits**

This course provides to the student a general overview of the basic concepts of Thermodynamics and their biochemical applications. In addition, systematic discussion of biological molecules, such as amino acids, proteins, nucleic acids, carbohydrates, and lipid structures, are discussed. Characterization, physical properties, and method of isolation of these molecules are studied. The pathways for the degradation and biosynthesis of the major classes of biological molecules will be discussed. The bioenergetic aspects of metabolism will be discussed first within the context of the whole catabolism and anabolism, individual pathways and enzymatic reactions.

#### **CHEM 390**

##### **Spectroscopic Methods for Organic Chemistry**

##### **Three Credits**

This course serves to the students as training for the interpretation of spectroscopic data in the identification of molecular structures. This is an introductory course, where the fundamentals of Nuclear Magnetic Resonance ( $^{13}\text{C}$ NMR and  $^1\text{H}$ -NMR), Infrared Spectroscopy (IR), Ultraviolet Spectroscopy (UV), and Mass Spectrometry (MS) are discussed. When possible, practical experiments will be combined with theoretical discussion, in order to provide the students with more effective training.

#### **CHEM 411**

##### **Advanced Inorganic Chemistry**

##### **Three Credits**

The course is an advanced study of transition metal compounds. The electronic structure, bonding, as well as the spectroscopic and magnetic properties of the transition elements are discussed, along with their applications to other systems. Several aspects of bioinorganic chemistry are studied, particularly the function of inorganic elements and inorganic compounds in living systems. Supramolecular chemistry is also discussed.

#### **CHEM 430**

##### **Instrumental Chemistry**

##### **Three Credits**

Introduction to principles that a scientist must know to understand and use more efficiently modern instrumentation. Study of the theoretical aspects and practical applications of modern instruments used for chemical analysis. Includes study of Infrared, Ultraviolet-Visible and fluorescence spectroscopies. Also the different types of chromatography, atomic absorption and

polarimetry. The methods based on the use of X-rays, mass spectrometry (MS), nuclear magnetic resonance (NMR), and scanning electron microscopy (SEM).

#### **CHEM 430L**

##### **Instrumental Chemistry Laboratory**

##### **One Credit**

Introduction to experimental principles that a scientist must know to understand and use more efficiently modern instrumentation. Study of the experimental aspects and practical applications of modern instruments used for chemical analysis, including infrared, ultraviolet-visible and fluorescence spectroscopies, different types of chromatography (HPLC, GC, GC-MS and TLC), atomic absorption, X-ray diffraction, nuclear magnetic resonance (NMR), and scanning electron microscopy (SEM).

#### **CHEM 451**

##### **Organic Synthesis**

##### **Three credits**

The course describes the synthesis of organic functional groups and carbon-carbon bond formation. It also focuses on different oxidation and reduction reagents and conditions, as well as on stereo chemical principles. Emphasis is placed on manipulation of functional groups, application of reaction sequences for specific synthesis of compounds, such as reaction mechanisms stereochemistry, conformational considerations and strategies, in order to provide the student with the necessary tools for solving synthetic problems using the elements of organic chemistry. Retrosynthesis analysis is thoroughly discussed and is applied to the synthesis of known compounds.

#### **CHEM 463**

##### **Physical Chemistry I**

##### **Three Credits**

The course covers the basic principles and applications of thermodynamics of chemical systems. Calculations of thermodynamic magnitudes and functions in different processes are studied using the Principles and Laws of Thermodynamics. The concepts of temperature, work, heat, enthalpy, entropy, chemical equilibrium and ideal and real systems in gas and condensed phase are studied. It also analysis chemical reactions under thermodynamics view, establishing considerations about the energetic balance, its spontaneity and extension, in which they take place. The studies of homogeneous and heterogeneous systems in which the phase changes of the substances take place are also in the core of this course.

#### **CHEM 463L**

##### **Physical Chemistry I Laboratory**

##### **One Credit**

Laboratory of thermodynamics, founded in the chemical equilibrium concept and surface chemistry. The course complements the theoretical discussions of the lecture with practical experiences, consolidating statistical analysis with good documenting practices. In this laboratory the nature of the gaseous state of matter, chemical equilibrium and the direction of chemical change are studied: calorimetry, enthalpy, equilibrium constants, solutions, phase changes, phase diagrams, partial molar properties and states and properties of matter.

#### **CHEM 464**

##### **Physical Chemistry II**

##### **Three Credits**

The Physical Chemistry II course is divided in two main topics: Quantum Mechanics and Kinetic. In the first topic introduces some of the basic principles of quantum mechanics. The concept of all properties of a system are expressed in terms of a wave function which is obtained by solving the Schrödinger equation will be studied. The calculations of molecules will make possible to understand the nature of the chemical bond. The application of quantum mechanics to spectroscopy, the study of the absorption and emission of electromagnetic radiation, will be treated at the end of this topic. The second topic is concerned with the rates and mechanisms of chemical reactions. The calculation of the rates of certain processes by use of a simple model of atoms and molecules in the gas phase for ideal and real gases will be elaborated.

#### **CHEM 464L**

##### **Physical Chemistry II Laboratory**

##### **One Credit**

Chemical kinetics evaluates the rate of chemical reactions and the plausible mechanism followed by these reactions. The laboratory experiences present different analytical techniques in the kinetics field, such as: colorimetric methods, initial rates method, method of isolation and chemical methods. A quantum mechanics activity is included to apply the particle in a box theoretical model when analyzing the light absorbance of polymethylene dyes.

#### **CHEM 475**

##### **Preparation for Chemistry Licensing**

##### **Three Credits**

This course is designed for chemistry students to succeed in the exams required by the State Department of Puerto Rico to grant the Chemist License. The course is a review of the main topics of General, Organic, Analytical and Physical Chemistry with emphases in the kind of questions that usually are presented in these exams. It also provides a

valuable global vision of the concepts already covered in the core courses of the program reinforcing the main capabilities a Chemist should have to work and succeed in its future professional life, including ethical behavior and stress management.

#### **CHEM 481**

##### **Introduction to Computational Chemistry**

##### **Three Credits**

The course covers the principles of quantum mechanics and statistical mechanics, with a specific focus on applications in chemistry. The course will provide a rigorous background for understanding modern quantum mechanical calculations. A major goal is to illustrate how theory and experiment work together in the development of a viable model for the nano-world of atoms and molecules. However, while the primary concern of this course is an operational mastery of fundamental principles, the rich historical and philosophical background of quantum theory will not be neglected. As in all Physical Chemistry courses at Universidad Ana G. Méndez-Recinto de Gurabo, development of problem solving and critical thinking skills are stressed.

#### **CHEM 485**

##### **Electrochemistry**

##### **Three Credits**

The Electrochemistry course discusses the theory and applications of electrochemical processes in solution and in the solid state. The first part of the course introduces some basic concepts and definitions, as well as the thermodynamics involved in electrochemical systems. Thermodynamic arguments will be used to derive expressions for the electric potential of cells and for solution-electrode interfaces. The course also covers the dynamic aspects of the electrochemical processes. Transport properties of electrolytes and the kinetics of electrochemical reactions will be discussed to explain the microscopic and macroscopic flux of electrons at the interface of an electrode and an ionic solution. The second part of the course will deal with the instrumental techniques used to perform electrochemical measurements. The fundamentals of these techniques will be explained in terms of the basic concepts discussed in the first part of the curriculum. Some applications, such as fuel cells, batteries, electrochemical sensors, catalysis, and corrosion will be presented in the last part of the course.

#### **ENCH 358**

##### **Environmental Chemistry I**

##### **Three Credits**

The course deals with basic principles of environmental chemistry. Topics include properties of chemical substances related to the environment, their transformation, degradation, and toxicity. Environmental toxicology principles and concepts are also introduced.

#### **ENCH 359**

##### **Environmental Chemistry II**

##### **Three Credits**

The course deals with characterization of specific contaminants. Natural environmental processes, including photosynthesis, atmospheric chemistry and soil contamination are also discussed.

#### **ENCH 360**

##### **Environmental Analysis Techniques**

##### **Three Credits**

The course covers the following topics: methods and techniques for the design and execution of sample plans in diverse environmental systems covering air, soil, and water; preservation methods and sample analysis considering physical, chemical and microbiological parameters, and interpretation of results.

#### **ENCH 362**

##### **Environmental Geochemistry**

##### **Three Credits**

The course deals with the application of quantitative methods and physical-chemical analysis to the study of the distribution and movement of chemical elements in geological processes. Emphasis is placed on the transport and fate of organic and inorganic pollutants in earth.

#### **ENCH 363**

##### **Atmospheric Chemistry**

##### **Four Credits**

The course is an introduction to the chemical and physical processes determining the composition of the atmosphere and their implications for climate, ecosystems, and human welfare. Emphasis is placed on how anthropogenic activity has affected those processes.

#### **ENCH 367**

##### **Environmental Hydrogeology**

##### **Three Credits**

The course is a survey of the geologic and hydrologic factors controlling the occurrence, movement, and chemical quality of ground water. Topics include physical, chemical, and biological characteristics of surface and subsurface water, aquifer characterization, runoff processes, fluvial processes, water supply and consumption, contaminant transport, and remediation techniques.

**ENCH 368****Environmental Research****Three Credits**

The course centers on the study of basic concepts of research in environmental chemistry. Emphasis is placed on basic research techniques and the search for scientific information.

**ENCH 370****Environmental Toxicology****Three Credits**

The course centers on a study of the distribution of toxic agents in the environment. Emphasis is placed on the transport, bioaccumulation, degradation, and ecological effects of toxic agents.

**ENCH 371****Environmental Microbiology****Four Credits**

The course deals with interactions between microorganisms and naturally occurring polymers and how this relates to the degradation and persistence of environmental pollutants. Emphasis will be placed on microbial ecology, together with basic degradation processes and the ways in which they can be used in bioremediation strategies of contaminated aquatic and terrestrial systems.

**ENSC 499****Fundamental of Environmental Sciences****Three Credits**

An introductory course to the study of the environmental sciences. The course has been designed to provide students with basic information about the structure and function of natural ecosystems; the effect of human activities upon air, water, soil, flora and fauna; environmental pollutants and their effect upon human and environmental health; the paradigm of sustainable development and environmental ethics.

**FOOD 101****Introduction to Food Technology****Three Credits**

This is an introductory course for all first year science major students, which brings the general scope of food science and technology. The main focus of the course is the application of the basic sciences and technology to the study of the fundamental nature of foods and the principles of its processing. The course covers areas regarding the raw material, added value and processing. Part of the scope also

covers the processing of different kinds of foods, such as fruits and vegetables, meats, drinks and candies. The course also studies food safety laws, the federal agencies in charge of these laws, packaging and labeling of foods.

**FOOD 201****Microbial Food Safety Hazards and Quality Control****Three Credits**

The course is aimed at students interested in the study of diseases from a population-based perspective. The course begins with an overview of globalization and the epidemiology of foodborne diseases. The course describes the biotic and abiotic factors that affect disease rates, distribution and disease prevention. Current and statistical data on emerging diseases transmitted through food are also included.

**FOOD 250****Food Safety and Protection related to Public Health****Three Credits**

The course studies the relationship between food safety and protection related to public health. The course starts with a historical and political background that includes regulatory agencies and historical events or cases that impulse the creation of the HACCP. Provide the student with an introduction to the Hazard Analysis Critical Control Points (HACCP) principles and their importance in the prevention of biological, chemical or physical alteration of food. This is followed by the practical application of the HACCP; design, Implementation, Verification, and Maintenance for Ongoing Risk Management. In addition, the course provides up-to-date information on current topics in food safety regulations, issues and control of potential risks. It covers topics related to emerging foodborne pathogens (i.e., bacteria, viruses, protozoans and helminthes). Other topics covered are: virulence, pathogenesis, toxins production, epidemiology, sources of microorganism contamination, current technology and food safety prevention and control.

**FOOD 300****Food Laws, Standards & Regulations****Three Credits**

Federal, state and territories laws regulations and case law history affecting food production, processing, packaging, marketing and distribution of food and food products. History of food law, enactment of laws and regulations, legal research, and regulatory agencies.

**FOOD 400****Food Biotechnology****Three Credits**

This course study origins of biotechnology, genetic manipulation of organisms involved in food manufacture. Include the different techniques of genetic and culture manipulation and transformations different pathways of food chain, and study the social and ethical issues related to biotechnology in food.

### **FSST 105**

#### **Introduction to Scientific Study**

##### **Three Credits**

This is a required course for all students entering the School of Science and Technology. It includes the development of techniques and skills required in scientific studies.

### **GESC 107**

#### **Introduction to the Computer and its Applications**

##### **Three Credits**

The course is an introduction to the use of the computer, the Windows operating system and Internet navigation. Students will use applications such as Word, Excel, and Power Point. Data handling and graphic presentations are stressed.

### **GESC 227**

#### **Environmental Health**

##### **Three Credits**

The course deals with health, the environment, and pollution. It includes an introduction to ecology, human activity in natural ecosystems, overpopulation, water and atmospheric pollution, solid waste, noise, and radiation.

### **GESC 264**

#### **Introduction to Scientific Research**

##### **Three Credits**

The course covers basic concepts of scientific research. Emphasis is placed on the application of the components of the scientific method. The course offers training in scientific literature searches, editing techniques, oral presentations, and poster presentations.

### **GESC 361-362-363-364**

#### **Seminars on Topics in Modern Science**

##### **One to Four Credits**

The course introduces the student to topics in modern science. Outstanding local and international scientists and professors will be invited. The course addresses specific needs of professional groups, such as public and private school teachers and other professionals. Credits vary from one to four depending on the hours. One semester each.

### **INSC 101**

#### **Integrated Sciences I**

### **Three Credits**

This is a science course in which the student discovers basic principles of physical and earth sciences. It prepares students to take decisions and solve problems regarding the universe, their planet, their environment and surroundings. It provides students the skills they need to analyze published articles related to science discoveries. The development of scientific concepts is emphasized by means of the inquiry method, through interdisciplinary teaching and an integrated curriculum.

### **INSC 102 @**

#### **Integrated Sciences II**

##### **Three Credits**

This is a science course in which students discover basic principles of chemistry and biology sciences. It prepares students to make decisions and solve problems regarding the universe, their planet, their environment and surroundings. It provides then the necessary skills to analyze published articles related to science discoveries. The development of scientific concepts is emphasized by means of the inquiry method through, interdisciplinary teaching and an integrated curriculum. The course is offered to education students and to future elementary and secondary school teachers.

### **MATH 100 @**

#### **Basic Mathematics**

##### **Three Credits**

The course is an introduction to mathematics for students who need to improve basic skills. It covers fundamental operations with natural and cardinal numbers, fractions, and decimals; ratios and proportions; percents and measures. The course will be offered to students with CEEB Mathematics Achievement Test scores below 490, or scores on the Department's Placement Test below 70%. One semester.

### **MATH 107**

#### **Basic Fundamentals of Mathematics**

##### **Three Credits**

This course will develop basic mathematical competences in the following areas: arithmetic, algebra, geometry, probability, and statistics. The main topics covered are: arithmetic operations, equations and linear inequalities, area and perimeter of polygons and circles, Cartesian coordinates, similarity and congruence of triangles. Special emphasis is placed on problem solving.

### **MATH 121**

#### **Intermediate Algebra**

##### **Three Credits**

This course covers factorization of polynomials, linear inequalities, problem solving; absolute-value equations and inequalities; operations and simplifications with algebraic fractions; linear equation graphics, linear equations systems and solution methods; graphics, substitution and elimination. Topics include inequalities for two variables and rational exponentials, as well as solution of radical expressions, equations involving radicals, and quadratic inequalities. Emphasis is on problem-solving.

### **MATH 125**

#### **Fundamental Topics in Mathematics I**

##### **Three Credits**

This is a course for students of the School of Education. It includes number systems, theory of numbers, real number systems, basic concepts of algebra, linear equations and graphs, and financial mathematics.

### **MATH 126**

#### **Fundamental Topics in Mathematics II**

##### **Three Credits**

This course includes problem-solving, set theory, logic, geometry, measurement, probability, statistics, theory of numbers, and fundamental topics for students of the Schools of Education, Humanities and Office Administration.

### **MATH 151**

#### **College Algebra**

##### **Four Credits**

The course of College Algebra includes the following topics: functions and graphs, polynomial and rational functions, exponential and logarithmic functions.

### **MATH 151L**

#### **College Algebra Laboratory**

##### **Cero Credits**

Practices and experiences of laboratory for the College Algebra course, which includes a review of intermediate algebra and the following topics: equations and inequalities, functions and their graphs, linear functions, polynomial and rational functions, exponential and logarithmic functions. equations and inequalities, graphs, functions, polynomial and rational functions, exponential and logarithmic functions, and systems of linear equations.

### **MATH 152**

#### **Trigonometry and Analytical Geometry**

##### **Four Credits**

This course is a preparation for the differential and integral calculus in one variable. It is designed for students who plan to obtain a degree in science, mathematics, computer sciences, engineering, and mathematics education. The

topics covered include trigonometric functions of real numbers and angles and their graphs, analytical trigonometry, applications of trigonometry, complex numbers and vectors, systems of linear equations, and analytic geometry.

### **MATH 152L**

#### **Trigonometry and Analytical Geometry Laboratory**

##### **Cero Credits**

Practices and experiences of laboratory for the Trigonometry and Analytical Geometry course, which includes trigonometric functions of real numbers and angles and their graphs, analytical trigonometry, applications of trigonometry, complex numbers and vectors, systems of linear equations, and analytic geometry.

### **MATH 155**

#### **Pre-Calculus (Compendium)**

##### **Three Credits**

This course covers the system of real numbers and its properties; properties of exponents; solution of inequalities (including absolute value quadratic and linear inequalities) and interval notation; solution of equations, relations, functions, graph properties of functions, rational functions, logarithmic and exponential functions; solution of linear systems of equations using determinants and matrices. Also covered are circular functions, properties and graphs; trigonometric functions, trigonometric identities and equation applications, problems using sine and cosine law; vectors and applications, complex numbers (geometrical representation and operations); polar coordinates and De Moivre's Theorem. Analytic geometry topics include circle, parabola, ellipse, and hyperbola, as well as axis notation and translations.

### **MATH 170**

#### **Basic Geometry**

##### **Three Credits**

The course covers basic concepts of geometry for students of the International School of Design. This course covers basic concepts of plane and spatial geometry. Emphasis is placed on the use of the ruler, protractor and compass for diverse geometric constructions.

### **MATH 173**

#### **Plane and Space Geometry I**

##### **Three Credits**

The course centers on basic concepts of geometry including the straight line, angles, triangles,

elementary constructions. It includes demonstrations using postulates, definitions and theorems. Also included are the Theorem of Congruency, regular polygons, Pythagoras' Theorem and its applications.

#### **MATH 174**

##### **Plane and Space Geometry II**

##### **Three Credits**

The course covers circumference, areas, polygonal gerions, plane Cartesian geometry, spatial geometry, solid bodies and surfaces, surface areas, volume, and basic nonEuclidean geometry.

#### **MATH 199**

##### **Quantitative Methods I**

##### **Three Credits**

Students will study the following topics: functions and their properties; linear and quadratic equations and their graphs; linear inequalities; quadratic inequalities; exponential and logarithmic functions; solution of systems of equations, and mathematical progressions.

#### **MATH 200**

##### **Quantitative Methods II**

##### **Three Credits Hours**

The course covers linear programming, the simplex method, limits, differential calculus, optimization and introduction to integral calculus.

#### **MATH 215**

##### **Scientific Computer Programming**

##### **Three Credits**

The course introduces science and mathematics students to computer programming. Topics include basic problemsolving skills, including translating problems into BASIC computer language for computer processing. The course includes explanations of the language of arithmetical operations. Three hours of lecture and two hours of laboratory per week.

#### **MATH 221**

##### **Calculus I**

##### **Four Credits**

This calculus course is an introduction to differential and integral calculus in one variable. It is designed for students who plan to obtain a degree in science, mathematics, computer science or engineering. The topics covered includes: the traditional treatment of the limit, the derivative as a rate of change, derivative of functions and techniques to calculate them, applications of the derivative, integration as the area under a curve or between curves in an interval,

integration of functions and the Fundamental Theorem of calculus.

#### **MATH 221L**

##### **Calculus I Laboratory**

##### **Cero Credits**

Practices and experiences of laboratory for the Calculus I course, which includes: the traditional treatment of the limit, the derivative as a reason for change, derivative of functions and techniques to calculate them, applications of the derivative, integration as the area under a curve or between curves in an interval, integration of functions and the Fundamental Theorem of calculus.

#### **MATH 222**

##### **Calculus II**

##### **Four Credits**

Integration of transcendental functions. Integration techniques. Applications of the definite integral. Indeterminate forms. Improper integrals. Sequences and series.

#### **MATH 222L**

##### **Calculus II Laboratory**

##### **Cero Credits**

Practices and experiences of laboratory for the Calculus II course, which includes: derivatives and integrals of transcendental functions. Integration techniques. Applications of the definite integral. Indeterminate forms. Improper integrals. Sequences and series.

#### **MATH 223**

##### **Calculus III**

##### **Four Credits**

This course includes vectors and geometry of space, vector functions, partial derivatives and multiple integrals.

#### **MATH 223L**

##### **Calculus III Laboratory**

##### **Cero Credits**

Practices and experiences of laboratory for the Calculus III course which includes: vectors and geometry of space, vector functions, partial derivatives and multiple integrals.

#### **MATH 290**

##### **Theory of Numbers**

##### **Three Credits**

This course covers divisibility, congruency, Gauss intergers, and Diophantine equations. Course activities will center on proving theorems.

**MATH 305**  
**Probability and Statistics I**  
**Three Credits**

The course deals with basic principles of statistics: data collection and classification, measurement of central tendency, variance, probability and distribution (the normal, the Poisson, the binomial and others), sampling theory in finite populations, and principles of experimental design.

**MATH 306**  
**Probability and Statistics II**  
**Three Credits**

The course covers proof of hypothesis, students t-test, Z transformation, chi-square, differences of means, frequency distribution, analysis of variance (ANOVA), linear correlation, regression analysis and non-parametric statistics, as well as Mann Whitney, T-Test, and Sign Test.

**MATH 313**  
**Analytical Geometry and Calculus III**  
**Three Credits**

This course will cover the following topics: vectors, parametric curves, partial derivatives, and multiple integrals.

**MATH 315**  
**Computer Programming with Pascal**  
**Four Credits**

The course is an introduction to computer science for education students. Students will learn programming with Pascal. Lectures and laboratory.

**MATH 325**  
**Digital Computation**  
**Three Credits**

The course deals with basic and intermediate concepts of digital electronic circuits and their relation to computers. Digital and algebraic logic and their applications and concepts of memory are covered.

**MATH 330**  
**Data Structure**  
**Three Credits**

The course covers basic processes of the computer, including linear and orthogonal listings, chains and arrangements, tree storage and search techniques.

**MATH 340**  
**Discrete Methods**

**Three Credits**

The course is designed primarily for science and education students majoring in mathematics. Topics include set theory, graph theory and combinational analysis as applied to computers. Group theory and Boolean algebra and their application to computers will also be discussed.

**MATH 345**  
**Abstract Algebra**  
**Three Credits**

This is an introductory abstract algebra course for students specializing in mathematics. It covers sets, functions, binary operations, integers, groups, rings, domains, fields, and polynomials. Emphasis is placed on theorems and application problems.

**MATH 350**  
**Linear Algebra**  
**Three Credits**

This course is for students specializing in mathematics. It covers two-variable linear equations systems, "n x m" linear systems, and homogeneous and heterogeneous systems. It includes matrix operations and vector spaces, as well as quadratic forms, linear transformation and linear programming.

**MATH 355**  
**Practical Internship in Mathematics I**  
**Three Credits**

This is a practical internship in another university institution, private industry, or government agency. A minimum of sixty (60) hours is required.

**MATH 356**  
**Practical Internship in Mathematics II**  
**Three Credits**

This is a practical internship in another university institution, private industry, or government agency. A minimum of sixty (60) hours is required.

**MATH 365**  
**Research in Mathematics I**  
**Three Credits**

This course is a scientific laboratory and/or field research. The weekly schedule will be agreed upon by the student and the professor chosen to supervise research. The work schedule should not exceed nine (9) hours per week and should last one semester.

**MATH 366**  
**Research in Mathematics II**  
**Three Credits**

This course is a scientific laboratory and/or field research. The weekly schedule will be agreed upon by the student and the professor chosen to supervise research. The work schedule should not exceed nine (9) hours per week and should last one semester.

**MATH 367**  
**Combinatorial Analysis**  
**Three Credits**

The course covers fundamental concepts of all branches of combinatorial analysis. The course includes enumeration problems, counting equivalence classes, the principle of exclusion and inclusion, and generator functions. The course also deals with combinatorial structures, and applications of graph theory to computer science.

**MATH 370**  
**Numerical Analysis**  
**Three Credits**

The course emphasizes algorithms in numerical analysis and their application to computer science. The course includes interpolation, non-linear equations, systems and approximation by polynomials, and integration.

**MATH 395**  
**Differential Equations**  
**Three Credits**

The course covers ordinary differential equations and first and second order linear equations, as well as special cases of superior order equations. It emphasizes applications in physics, chemistry and engineering.

**MTEC 400**  
**Introduction to Clinical Laboratory Administration and Bioethics**  
**Two Credits**

This course will learn important concepts developed for the administration and supervision of clinical laboratories. It will emphasize the financial aspects, state and federal regulations, security, and tools to work together, with the public and special situations, ethics, statistical calculations and reporting of results. Also developed techniques for working aspects of education in their area of work.

**MTEC 401**  
**Clinical Laboratory Instrumentation, Methodologies and Molecular Techniques**

**Two Credits**  
The course is an introduction to the use, practice and management of clinical laboratory equipment. It makes emphasis on developing the skills to handling specialized and computerized equipment and computerized as well as the methods and molecular tests used to detect various diseases.

**MTEC 402**  
**Clinical Parasitology and Clinical Virology**  
**Two Credits**

The course presents the techniques used for identifying parasites through clinical laboratory methods. It makes emphasis in the samples analysis, handling, and processing. Studies parasite's life cycle and how it spreads. Methods and procedures for virus isolation, diagnosis and control for disease prevention, and clinical significance are presented. The importance of molecular techniques in the diagnosis of diseases caused by viruses or parasites will be discussed.

**MTEC 403**  
**Clinical Laboratory Practice – Parasitology**  
**One Credit**

The student will practice in the area of parasitology management, analysis, identification results and will report importance for medical diagnosis. It will emphasize control and quality assurance in the clinical laboratory. Possible molecular techniques for identifying parasites discussed.

**MTEC 404**  
**Clinical Mycology**  
**One Credit**

Specific study of the procedures used to isolate and identify fungal pathogens to humans. Diagnosis of diseases caused by fungi. Emphasis on clinical symptoms, treatment and epidemiology.

**MTEC 405**  
**Clinical Laboratory Practice - Microbiology**  
**Four Credits**

The clinical rotation in microbiology provide the student the experience of using a variety of techniques to identify pathogens, including cultivation and isolation, direct examination, serology and the use of automated equipment. The student will also learn various staining procedures and will be trained in the correct procedure for interpreting studies of bacterial susceptibility. Emphasis on control and quality assurance in the clinical laboratory is made.

**MTEC 406**  
**Clinical Hematology and Hemostasis**  
**Four Credits**

This course studies of blood cells in normal and abnormal conditions. Students will be instructed in the theory and practical application of hematology procedures including quality control, quality assurance, safety, manual methods and / or automated. Sequences maturation of blood cells is discussed. Normal morphology and abnormal morphology related illness will be appreciated. Theme coagulation procedures and practical applications will be presented.

Includes laboratory exercises based on commonly performed manual and semiautomatic methods.

#### **MTEC 406L**

##### **Clinical Hematology and Hemostasis Laboratory**

##### **Cero Credits**

The course provides the practical application of procedures for routine and special hematology, both manual and automated red blood and white blood cells. The sequence of cell maturation, their morphology and these will be discussed anomalies. Include practicing techniques in the area of coagulation and how are you will relate to various health conditions.

#### **MTEC 407**

##### **Clinical Laboratory Practice - Hematology**

##### **Four Credits**

Rotation Hematology is the study of the blood and particularly its cellular components. Students begin their rotation familiar with the operation and theory of automated instrumentation. Emphasis is placed on the identification of white blood cells and the evaluation of the morphology of red blood cells by conducting differential manuals. Proper identification is essential for the accurate diagnosis of leukemia, anemia and infections. Instruments coagulation and coagulation tests are also studied. Students will practice in the areas of hematology and coagulation and acquire the skills needed to work in this area laboratory.

#### **MTEC 408**

##### **Clinical Immunology and Clinical Serology**

##### **Three Credits**

This course covers the science of immunology and serology through the study of theories and processes related to natural body defenses. Included are the immune response, principles of antigen-antibody reactions, and the principles of serological procedures as well as quality control, quality assurance, and safety. This includes performance of serological procedures used to aid in the detection or diagnosis of certain diseases. Throughout this course, special emphasis is placed on correlating of laboratory results with the patient's probable condition.

#### **MTEC 408L**

##### **Clinical Immunology and Clinical Serology**

##### **Laboratory**

##### **Cero Credits**

This laboratory course provides the practical application to serological methods used to assist in the detection or diagnosis of certain diseases. Emphasis will be placed on the correlation of laboratory results with patient likely conditions.

#### **MTEC 409**

##### **Clinical Laboratory Practice - Serology**

##### **One<sup>[MCM1]</sup> Credit**

In this rotation the student will learn practical serological procedures used in the diagnosis of health conditions. In this rotation the student will learn practical serological procedures used in the diagnosis of conditions. It will emphasize the importance of managing the equipment used to make samples, quality control and safety in the clinical laboratory. The student will have the opportunity to work with automated equipment that perform special tests and information systems in the clinical laboratory.

#### **MTEC 410**

##### **Clinical Chemistry**

##### **Four Credits**

The theory and application of chemical analytical procedures in the study of diseases both past and present. Students will analyze through biochemical methods, blood and other body fluids. They will learn to perform clinical tests to identify the carbohydrate and protein metabolism, acid - base balance, electrolytes, vitamins, and toxicology. Also they will learn about the analytical procedures and principles of lipids, lipoproteins, hormones, and porphyrins. Students will be instructed to interpret and correlate laboratory data using manual and automated procedures.

#### **MTEC 411**

##### **Clinical Laboratory Practice - Clinical Chemistry**

##### **Four Credits**

Rotation in the area of Clinical Chemistry is a learning experience based on work related to health that allows students to apply theory in specialized work, skills and concepts. Students will work with a variety of automated and semi-automated procedures, testing, safety, quality assurance in the clinical laboratory and everything related to clinical laboratory work. Direct supervision is provided by a clinical professional.

#### **MTEC 412**

##### **Study and Analysis of Body Fluids and Urine**

##### **Analysis**

##### **One Credit**

This course explains the basic concepts related to the physiology of the kidney and other body fluids. Students will learn the principles and procedures for the physical/chemical and microscopic analysis of urine, fecal heces and other body fluids are known urinary tract diseases, hereditary diseases and metabolic diseases. It emphasizes the comparison of normal samples and pathogens. Methods and equipment will be used to detect toxic chemicals in the urine.

**MTEC 413**  
**Clinical Laboratory Practice - Body Fluids and Urine Analysis**  
**One Credit**

Students will learn about the physical, chemical, and microscopic examination of the urine samples. It will emphasize the procedures of macroscopic urinalysis and microscopic analysis. Students will work on automated instruments in the clinical area of urinalysis and additional prosecute other body fluids that are working in this area.

**MTEC 414**  
**Clinical Bacteriology**  
**Four Credits**

This course presents the bacterial nomenclature and pathogens in man. Developing skills for taking samples, handling and preservation is emphasized. Students will identify identity the morphological Characteristics of pathogens and know the culture media used in the tests of identification. Biochemical and immunological microorganism's ideas importance of clinical and molecular tests for Identifying bacteria tests are performed. Discussion of molecular tests for the diagnosis of infectious diseases.

**MTEC 414 L**  
**Clinical Bacteriology Laboratory**  
**Cero credits**

In this laboratory the students will apply the theory learned about the pathogenesis of microorganisms. Emphasis will be placed on the collection, handling, quality control, identification, susceptibility testing, automated testing and how to report the results. The utility of molecular samples and the importance of these in the early diagnosis of infectious diseases will be demonstrated.

**MTEC 415**  
**Clinical Laboratory Practice - Blood Bank**  
**Three Credits**

This rotation in the area of blood bank will provide the student with experiences in previous transfusion testing, including ABO and Rh testing, antibody detection, compatibility tests and procedures used in the identification of irregular antibodies. The student will be evaluated by

strangers for identification purposes. Reactions to transfusion, ABO discrepancies and release of blood in emergency situations will be covered in this practice.

**MTEC 416**  
**Clinical Laboratory Practice - Case Studies of Clinical Laboratory**  
**One Credit**

In this practice the practical and theoretical concepts of the profession of medical technologist explains. It will emphasize on case studies related to the profession. The student will submit a draft of current interest related to the profession. Topics related to this project include the methods of literature research, teamwork, evaluation of the impact on clinical outcomes and the analysis and implementation of clinical applications.

**MTEC 417**  
**Immunoematology**  
**Three Credits**

Study of blood groups, components used in transfusion, its collection and storage of these. Includes use of each and the components according to the condition presented by the patient. Includes discussion of adverse reactions to transfusion and investigation of them. It covers the HLA system and its clinical significance, hemolytic anemia and autoimmune conditions newborn among others. The ethical and medical legal aspects will be emphasized in the area of transfusion services.

**MTEC 417 L**  
**Immunoematology Laboratory**  
**Cero Credits**

In this laboratory practices the routine procedures in blood banking, including blood group and Rh typing, antibody screenings, antibody identification, cross matching, elution and absorption techniques. Discusses safety and quality assurance procedures in blood bank laboratory.

**PHOP 255**  
**Water Purification and Treatment Systems in Pharmaceutical & Chemical Processes**  
**Three Credits**

The course covers the major aspects related to high purity water systems use in the chemical, and pharmaceutical industries. Emphasis will be in equipment set-up and maintenance, multimedia filtration, chlorination, softening, carbon adsorption, filtration, distillation, storage and distribution, steam in place.

Res

### **PHSC 101**

#### **Introduction to Physical Science I**

##### **Three Credits**

This course will consist of 3 hours weekly and contains the study at elementary level of mechanical, thermal and sound phenomena and will serve as it bases for the interpretation of the surrounding world and its practical applications. The approach of the course is characterized essentially for being inductive-deductive. In the analysis of the physical phenomena the qualitative one must prevail sometimes and, when be prudent, the quantitative one. The professor will use diverse strategies in classes like conferences, group discussion of information presented/displayed by individual students and discussions. It would be possible to be brought subjects that are not in the course and each student will discuss thorough this subject. When showing the concepts must lean in experimental demonstrations and the computerized technology must be used. The use of the computers in the classroom will allow: accomplishment of experiments with mathematical models; automatization of physical experiments. Problems would be solved using systems of equations no more than two equations, referred to the fundamental physical laws and some elements of trigonometry.

### **PHSC 102**

#### **Introduction to Physical Science II**

##### **Three Credits**

This course will consist of 3 hours weekly and contains the study at elementary level of electrical, magnetic and luminous phenomena and will serve as it bases for the interpretation of the surrounding world and its practical applications. The approach of the course is characterized essentially for being inductive-deductive. In the analysis of the physical phenomena the qualitative one must prevail sometimes and, when be prudent, the quantitative one. The professor will use diverse strategies in classes like conferences, group discussion of information presented/displayed by individual students and discussions. It would be possible to be brought subjects that are not in the course and each student will discuss thorough this subject. When showing the concepts must lean in experimental demonstrations and the computerized technology must be used. The use of the computers in the classroom will allow: accomplishment of experiments with mathematical models; automatization of physical experiments. Problems would be solved using systems of equations no more than two equations, referred to the fundamental physical laws and some elements of trigonometry.

### **PHSC 120**

#### **Technical Science**

##### **Three Credits**

The course provides students with an introduction to the basic principle and applications of mechanics, electricity and magnetism in matter.

### **PHSC 203**

#### **General Physics I**

##### **Three Credits**

The course contains concepts, physical amounts and laws to interpret and to describe the mechanical movement of the bodies (including Oscillations) from the analysis of its interactions, as well as their thermal interchanges, everything presented with a mathematical level of depth of differentials variations: derived and integral. Algebra and trigonometry will be used with amplitude, as well as the work with vectorial amounts. Integration and derivation from potential, exponential, sine and cosine functions will used so much in the theoretical analysis in classes, like in problems that should be solve by the students. At the beginning of the semester, in the kinematics chapters, will become more emphasis in the derivation that in integration, because the student is beginning to study Calculus I; but already in the middle of the semester (in the subjects of work, potential energy, center of mass, moment of inertia, simple harmonic motion, work in thermodynamic processes) integrations in the evaluations will be able to be included. Strategies or forms of education of the course will be: conferences, practices of laboratory and discussion of problems in groups.

### **PHSC 203L**

#### **General Physics I with Calculus Laboratory**

##### **One Credit**

The knowledge of this course contribute to that the student interprets and verifies the main definitions, laws and theories of the mechanics and thermodynamics and in its practical application. It dominates to the main experimental techniques and the work with the measuring instruments and develops experimental skills that allow him to acquire new knowledge.

### **PHSC 204**

#### **General Physics II**

##### **Three Credits**

The course contains concepts, physical amounts and laws to interpret and to describe to the electromagnetic processes in the nature and the technique, as well as the fundamental characteristics of the waves (mechanical and luminous), presenting with a mathematical level of depth of differentials variations: derive and integration. Algebra and

trigonometry will be used with amplitude, as well as the calculations with vectorial amounts. The differential calculus will be used with potential, sine, cosine and exponential functions. The laws of electromagnetism will appear in their integral form, but the situations to solve will be with fields of high symmetry (variant of the cases seen in classes). Strategies or forms of lessons of the course will be: conferences, practices of laboratories and discussion of problems in group.

#### **PHSC 204L**

##### **General Physics II with Calculus Laboratory**

##### **One Credit**

The knowledge of this course contribute to that the student interprets and verifies the main definitions, laws and theories of the electricity and magnetism and in its practical application. It dominates to the main experimental techniques and the work with the measuring instruments and develops experimental skills that allow him to acquire new knowledge.

#### **PHSC 205**

##### **General Physics I with Calculus**

##### **Four Credits**

The course contains concepts, physical amounts and laws to interpret and to describe the mechanical movement of the bodies (Oscillations including) from the analysis of its interactions, as well as their thermal interchanges, presented everything with a mathematical level of depth of differentials variations: derived and integral. Algebra and trigonometry will be used with amplitude, as well as the work with vectorial amounts. The integral derived ones and from potential, exponential, sine and cosine functions will be used so much in the theoretical analysis in classes, like problems that should be solve by students. In the kinematics chapters, at the beginning of the semester, will become more emphasis in the derivation that in integration, because the student is beginning to study Calculus II; but already in the middle of the semester (in the subjects of work, potential energy, center of mass, moment of inertia, simple harmonic motion, work in thermodynamic processes) integrations in the evaluations will be able to be included.

#### **PHSC 205L**

##### **Laboratory of General Physics I with Calculus**

##### **One Credit**

The knowledge of this course contribute to that the student interprets and verifies the main definitions, laws and theories of the mechanics and thermodynamics and in its practical application. It dominates to the main experimental techniques and the work with the measuring instruments

and develops experimental skills that allow him to acquire new knowledge.

#### **PHSC 206**

##### **General Physics II with Calculus**

##### **Four Credits**

The course contains concepts, physical amounts and laws to interpret and to describe to the electromagnetic processes in the nature and the technique, as well as the fundamental characteristics of the waves (mechanical and luminous), presenting with a mathematical level of depth of differentials variations: derived and integral. Algebra and trigonometry will be used with amplitude, as well as the vectorial amounts calculations. The differential calculus will be used with potential, sine, cosine and exponential functions. The laws of electromagnetism will appear in their integral form, but the situations to solve will be with fields of high symmetry (variant of the cases seen in classes).

#### **PHSC 206L**

##### **Laboratory of General Physics II with Calculus**

##### **One Credit**

The knowledge of this course contribute to that the student interprets and verifies the main definitions, laws and theories of the electricity and magnetism and in its practical application. It dominates to the main experimental techniques and the work with the measuring instruments and develops experimental skills that allow him to acquire new knowledge.

#### **PHSC 355**

##### **Practical Internship in Physics I**

##### **Three Credits**

The course is a practical internship in another university institution, private industry, or government agency. A minimum of sixty (60) hours is required.

#### **PHSC 356**

##### **Practical Internship in Physics II**

##### **Three Credits**

The course is a practical internship in another university institution, private industry, or government agency. A minimum of sixty (60) hours is required.

#### **PHSC 359**

##### **Modern Physics**

##### **Three Credits**

Governing Principles of the theory of Relativity, Blackbody Radiation, Photoelectric Effect, and Compton Effect. The Atom, Bohr Atom, De Broglie Postulates, Particle Diffraction, Heisenberg Principle, Atomic Physics, Quantum Mechanics, Statistical Physics, Ionic, Covalente and Metallic

Bonding. Vander Waals interactions. Molecules, Crystals, Metallic, Ionic Covalente, Molecular Crystals, Mechanism of Conduction in Metals, Nuclear Physics, Fundamental Particles and Interactions of Nature, Nuclear Energy.

### **PHSC 359L**

#### **Modern Physics Laboratory**

##### **One Credit**

The knowledge of this course contribute to the student interprets and verifies the most transcendental experiments in physics in the 20th century and their contributions to every branch of physics. Besides dominating the main experimental techniques and work with measuring instruments and develop experimental skills that enable them to acquire new knowledge.

### **PHSC 365**

#### **Undergraduate Research in Physics I**

##### **Three Credits**

The course is a scientific laboratory and/or field research. The weekly schedule will be agreed upon by the student and the professor chosen to supervise research. The work schedule should not exceed nine (9) hours per week and should last one semester.

### **PHSC 366**

#### **Undergraduate Research in Physics II**

##### **Three Credits**

The course is a scientific laboratory and/or field research. The weekly schedule will be agreed upon by the student and the professor chosen to supervise research. The work schedule should not exceed nine (9) hour per week and should last one semester.

### **PHOP 255**

#### **Water Purification Treatment**

##### **Three Credits**

The course covers the major aspects related to high purity water systems use in the chemical, and pharmaceutical industries. Emphasis will be in equipment set-up and maintenance, multimedia filtration, chlorination, softening, carbon adsorption, filtration, distillation, storage and distribution, steam in place.

### **PTTE 200**

#### **Internship in Technology**

##### **Three Credits**

This course extends classroom activities to a supervised, onthe-job learning experience directly connected to the student's educational or occupational goal. The student will be under the direct supervision of a college faculty member

as well as industrial personnel. Participants must attend orientation and seminar activities to familiarize themselves with internship program requirements and workplace habits. In addition, they must comply with pre-internship consultation with the faculty supervisor and complete 10 hours per week of training for a period of 9 weeks during the semester or summer. The student will receive written evaluations from the industrial and faculty supervisors. This course will be taken by the end of the student's second year of studies.

### **SCIE 250**

#### **Communication and Teams in the workplace**

##### **Three Credits**

This course will provide the student with the basic skills necessary to work as a member of a team in business or organizational environments.

# SCHOOL OF SOCIAL SCIENCES AND COMMUNICATIONS

The School of Social Sciences and Communications at Universidad Ana G. Méndez-Recinto de Gurabo offers degree programs which enable students to compete optimally in the workplace. At the undergraduate level, the School offers a bachelor's degrees with majors in criminology, psychology, social work, public administration, general social sciences, and communications. The School emphasizes the study of human nature, culture, ideas, institutions, human relations, communications, social change and human beings' relation with the environment.

## VISION

To develop productive and effective members of the global community with a professional, social, ethical and humanistic foundation.

## MISSION

The school provides high quality academic programs at both the undergraduate and graduate level in the social sciences and communications. The School undertakes this in a setting where excellence in teaching and learning are encouraged in the classroom, in practical internships, in the use of technology, in research, in communication media and in community projects. The basic goal is to provide our graduates not only competency in their chosen field, but also the diversity of experience needed to understand and appreciate the relationship between social sciences, communication and other disciplines.

The general objectives in all School curricula and programs are to:

1. Maintain academic excellence through study, teaching and social research.
2. Promote the knowledge and preservation of Puerto Rican and universal cultural values.
3. Develop the understanding that collaboration is necessary to achieve the sharing of ideas within disciplines, institutions, communities and nations.
4. Develop the capacity to analyze problems and seek solutions.
5. Promote understanding of the human condition, helping students to view the world with compassion and promoting responsible and ethical behavior.

6. Provide the student with interdisciplinary knowledge that makes it possible to understand modern society and its primary social problems.
7. Help the student to obtain a scientific and philosophic education, analytical and observant of human and organizational behavior.
8. Foster critical analysis and research of the economic, social and political situation in Puerto Rico today, and encourage interest in searching for alternative models and solutions.
9. Prepare the student to pursue graduate studies in the social sciences and communication fields.

## SPECIALIZED ACCREDITATIONS



The bachelor's degree in Arts in Social Work is accredited by the Council on Social Work Education (CSWE) since 2012.



Accredited by the  
American Psychological Association

The Doctoral Program in Counseling Psychology is accredited by the American Psychological Association (APA) since September 27, 2016.



The bachelors degree in Communications and Film Production, Video and Multimedia are accredited by the Accrediting Council on Education in Journalism and Mass Communications (ACEJMC) since 2018.

## FACULTY

Alice M. Del Toro-Ruiz / Associate Professor

PhD, Centro de Estudios Avanzados de Puerto Rico y del Caribe

**Carlos M. Cordero** / Associate Professor

PhD, University of Minnesota

**Carmen C. Ortiz-Velázquez** / Associate Professor

**Cristobal Santiago Berrios** / Instructor

JD, Universidad Interamericana de Puerto Rico

**Delza Canto** / Instructor

MA, Universidad Interamericana de Puerto Rico

**Edward H. Fankhanel-Seda** / Associate Professor

EdD, Argosy University

**Efraín Torres Montalvo** / Assistant Professor

PhD, Universidad Complutense de Madrid

**Francisco Millán** / Instructor

PsyD, Universidad del Turabo

**Ivette Soto** / Adjunct Faculty

PhD, Universidad de Málaga

**Jessica Velázquez Rodríguez** / Assistant Professor

PsyD., Universidad del Turabo

**Joaquín Vázquez** / Instructor

MA, Universidad de Puerto Rico

**Jorge Berríos** / Assistant Professor

PhD, Escuela de Medicina de Ponce

**Katia Gil de Lamadrid** / Associate Professor

PhD, Centro Caribeño de Estudios Postgraduados

**Luis Rosario Albert** / Assistant Professor

PhD Universidad de Navarra

**Lydael Vega** / Instructor

MA, Universidad Interamericana de Puerto Rico

**Marco A. Gil de Lamadrid-Gautier** / Professor

PhD, Centro de Estudios Avanzados de Puerto Rico y el Caribe

**María Del C. Santos-Gómez** / Professor

PhD, Centro Caribeño de Estudios Postgraduados

**María E. Ortiz** / Instructor

MS, University of London

**Carmen T. Ruiz de Fischler** / Associate Professor

PhD, Florida State University

**Pedro Rodríguez** / Instructor

MA, Universidad de Puerto Rico

**Ricardo Izurieta-Ortega** / Associate Professor

JD, Universidad de Puerto Rico

**Ricardo Fernández-Díaz** / Associate Professor

JD, Universidad Interamericana de Puerto Rico

**Silma Quiñónez-Roldán** / Assistant Professor

PhD, Professional School of Psychological Studies

**Sylvia Burgos Marrero** / Instructor

M.S.W. Universidad de Puerto Rico

**Tomasita Pabón Delgado** / Associate Professor

JD, MAP, Universidad de Puerto Rico

**Ursula Aragunda-Kohl** / Associate Professor

PsyD, Carlos Albizu University

**Víctor Manuel García** / Professor

PhD, Universidad de La Habana

**Vidamaris Zayas Velázquez** / Assistant Professor

PsyD, Universidad Carlos Albizu

**William T. Casper-Quñones** / Professor

PhD, Universidad Complutense de Madrid

JD, Universidad de Puerto Rico

**María Mercedes Ortiz Rivera** / Associate Professor Ph. D., Universidad de Puerto Rico

**María Vera** / Instructor  
MA, Universidad del Sagrado Corazón

**Migdalia Camacho-Hernández** / Associate Professor  
Ph.D., Universidad de Puerto Rico

**Paulina Lebrón López** / Instructor  
MSW, Universidad de Puerto Rico

### AREA OF SOCIAL SCIENCES

The Area of Social Sciences studies human nature, culture, ideas, institutions, human relations, social change and human beings' relation with the environment.

The School offers Bachelor of Arts degrees with majors in psychology, criminology, public administration, social work, general social sciences and communication.

#### Objectives:

1. Provide the student with interdisciplinary knowledge that makes it possible to understand modern society and its primary social problems.
2. Help the student to obtain a scientific and philosophic education, analytical and observant of human and organizational behavior.
3. Foster critical analysis and research of the economic, social and political situation in Puerto Rico today, and encourage interest in searching for alternative models and solutions.
4. Prepare the student to pursue graduate studies in the social sciences and related fields.

### PROGRAMS OF STUDY

#### ASSOCIATE DEGREE IN CINEMATOGRAPHY AND PHOTOGRAPHIC DIRECTION

This major prepares the student with basic knowledge of photography cinematography techniques, as well as the

concepts of audiovisual communication and aesthetics. Alumni will be able to conceptualize and shape audiovisual products for traditional media and electronic media.

<b>Total Credits</b>	<b>54</b>
<b>General Education Courses</b>	<b>18</b>
<b>Major Courses</b>	<b>33</b>
<b>Elective Courses</b>	<b>3</b>

#### General Education Courses (18 credits)

SPAN 152	Fundamentals of Reading and Writing II	3
ENGL 152	Fundamentals of Reading and Writing	3
FSSS 105	Freshman Seminar	3
SOSC 111	Individual, Community, Social and Ethical Responsibility II	3
ART 101	Art Appreciation	3
MATH 120	Introductory Algebra	3

#### Major Courses (33 credits)

COMM 313	Introduction to Digital Camera	3
COMM 311	Photojournalism	3
PROD 205	Film Direction and Production I	3
COMM 205	Communication Theory	3
COMM 400	TV Principles	3
COMU 320	Camera direction: The aesthetics of the imagen and its visual identity	3
COMU 325	Audiovisual art direction	3
COMU 308	Writing and Style for Audiovisual Communications	3
COMU 203	Audiovisual Communications I	3
COMU 315	Lighting for Audiovisual Media	3
COMU 463	Audiovisual Communications Media Project	3

**Electives courses (3 credits) ASSOCIATE DEGREE IN ARTS IN GENERAL SOCIAL SCIENCES**

This major provides a broad vision of society and its processes. Empowers students to understand and work on human and community service programs.

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>27</b>
<b>Core Courses</b>	<b>9</b>
<b>Major Courses</b>	<b>24</b>

**General Studies (27 credits)**

SPAN 152	Fundamentals of Reading and Writing II	3
SPAN 250	Writing Techniques	3
ENGL 152	Fundamentals of Reading and Writing	3
SPAN 331	Oratory	3
MATH 120	Introductory Algebra	3
SOSC 111	Individual, Community, Social and Ethical Responsibility I	3
SOSC 112	Individual, Community, Social and Ethical Responsibility II	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3

**Core Courses (9 credits)**

STAT 300	Elements of Statistics I	3	SOSC 320	Social Research Techniques	3
FSSS 105	Freshman Seminar	3			

**Major Courses (24 credits)**

PSYC 123	Survey Course in Psychology	3
ECON 123	Economic Principles and Problems	3
HIST 253	History of Puerto Rico (compendium)	3
POSC 390	International Political Systems	3
GEOG 205	Global Communities and Resources: critical perspective	3
PSYC 225	Social Psychology	3
POSC 253	Political System of Puerto Rico	3
SOCI 203	Sociology Principles (Compendium)	3

**ASSOCIATE DEGREE IN FORENSIC INVESTIGATION**

This major provides an introduction to forensic research from theoretical and practical perspective. It will prepare students on techniques, methods, procedures, basic knowledge and the necessary skills to perform as a forensic investigator.

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>15</b>
<b>Core Courses</b>	<b>18</b>
<b>Major Courses</b>	<b>27</b>

**General Education Courses (15 credits)**

FSSS 105	Freshman Seminar	3
ENGL 108	Oral Communication I	3
SPAN 112	Reports Writing in Spanish	3
MATH 120	Introductory Algebra	3
SOSC 112	Individual, Community, Social and Ethical Responsibility II	3

**Required Courses (18 credits.)**

CRIM 300	Criminal Law	3
CRIM 400	Criminal Procedure	3
CRIM 415	Evidence	3
IFOR 205	Basic Criminal Investigation	3
IFOR 210	Forensic Photography and Planimetry of the Crime Scene	3
IFOR 215	Fundamental Principles of Collection and Processing of Evidence at the Scene of the Crime	3

**Major Courses (21 credits)**

IFOR 220	Forensic Investigation of Traffic Accident	3
IFOR 225	Interview and Interrogation Techniques	3
IFOR 230	Introduction to Forensic Dactyloscopy	3
IFOR 235	Cyber Crimes Investigation	3
IFOR 240	Scientific Study of the Crime Scene	3
IFOR 245	Fraud Investigation	3
IFOR 250	Introduction to Fire Investigation	3
IFOR 255	Surveillance and Tracking: Technical and Ethical Aspects	3
IFOR 275	Seminar of Forensic Investigation	3

**BACHELOR'S DEGREE IN SOCIAL SCIENCES GENERAL**

It provides a broad vision of society and its processes. It enables you to understand and work on community human service programs, as well as to pursue graduate studies.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>33</b>
<b>Major Courses</b>	<b>27</b>
<b>Elective Courses</b>	<b>12</b>

**General Education Courses (48 credits)**

SPAN 152	Fundamentals of Reading and Writing	3
----------	-------------------------------------	---

SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research And Writing	3
MATH 120	Introductory Algebra	3
BIOL 101	Introduction to Biological Sciences I	3
BIOL 102	Introduction to Biological Sciences II	3
HUMA 111	Civilizations and Universal Culture I	3 HUMA
112	Civilizations and Universal Culture II	3
HIST 253	History of Puerto Rico (Compendium)	3
SOSC 111	Individuals, Community, Government	
	and Social Responsibility I	3
SOSC 112	Individuals, Community, Government	
	and Social Responsibility II	3
HIST 273	History of United States (Compendium)	3
SPAN 331	Public Speaking	3

**Core Courses (33 credits)**

STAT 300	Elements of Statistics I	3
GEOG 205	Global Communities and Resources	3
ECON 121	Economic Principles and Problems I	3
ECON 122	Economic Principles and Problems II	3
POSC 380	Constitutional Law	3
PSYC 123	General Psychology (Compendium)	3
PSYC 305	Human Relations and Public Service	3
SOSC 320	Social Research Techniques I	3
SOCI 325	Social of Deviance	3
SOCI 358	Social Problems of Puerto Rico	3
FSSS 105	Freshmen Seminar	3

**Major Courses (27 credits)**

PSYC 205	Personal Growth and Development	3
PSYC 225	Social Psychology	3
GEOG 225	Geography of Puerto Rico	3
POSC 253	Political Systems of Puerto Rico	3
POSC 203	Principles of Political Sciences	
	Compendium)	3
GEOG 201	Physical Geography	3
GEOG 202	Human Geography	3
ECON 253	Econ Development of PR	3
POSC 390	International Political Systems	3

**Free Electives (12 credits)**

**BACHELOR'S DEGREE IN SOCIAL SCIENCE WITH  
CONCENTRATION IN PSYCHOLOGY**

This program prepares you to identify and offer support in the management of mental health problems at the individual, family and social level. It will stimulate your critical and investigative capacity and you will be able to work as a Psycho-Social Technician, Psychologist Assistant and Mental Health Technician, among others.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>45</b>
<b>Core Courses</b>	<b>33</b>
<b>Major Courses</b>	<b>33</b>
<b>Elective Courses</b>	<b>9</b>

**General Education Courses (48 credits)**

SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
SPAN 331	Public Speaking	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
MATH 120	Introductory Algebra	3
BIOL 101	Introduction to Biological Sciences I	3
BIOL 102	Introduction to Biological Sciences II	3
HUMA 111	Civilizations and Universal Culture I	3 HUMA
112	Civilizations and Universal Culture II	3 PHIL 201
	Introduction to Philosophy	3
SOSC 111	Individuals, Community, Government	
	and Social Responsibility I	3
SOSC 112	Individual, Community, Government	
	and Social Responsibility II	3

**Core Courses (33 credits)**

FSSS 105	Freshman Seminar	3
HIST 253	History of Puerto Rico (Compendium)	3
STAT 300	Statistics Elements I	3
GEOG 205	Community & Global Resources	3
SOSC 320	Techniques of Social Investigation	3
SOCI 203	Principles of Sociology (Compendium)	3
STAT 301	Statistics Elements II	3
GEOG 202	Human Geography	3
PSYC 121	Psychology I	3
PSYC 122	Psychology II	3
PSYC 205	Personal Growth & Development	3

**Major Courses (30 credits)**

PSYC 225	Social Psychology	3
PSYC 281	Personality Development I	3
PSYC 282	Personality Development II	3
PSYC 321	Theories of Personality	3
PSYC 350	Principle of Psychopathology	3
PSYC 400	Experimental Psychology	4

PSYC 450	Seminary of Integration	2
Concentration Elective		<b>9 Free Elective Courses (9 credits)</b>
PSYC 221	Child Psychology	3
PSYC 222	Adolescent Psychology	3
PSYC 305	Human Relations and Public Service	3
PSYC 307	Group Dynamics	3
PSYC 343	Learning Theories	3
PSYC 355	Industrial Psychology	3
PSYC 360	Seminar on Human Sexuality	3
PSYC 405	Physiological Psychology	3

### BACHELOR'S DEGREE IN SOCIAL SCIENCES WITH CONCENTRATION IN CRIMINOLOGY

From a humanistic and interdisciplinary approach, you will study theories, approaches and processes that will enable you to attend to situations resulting from criminological problems and to pursue graduate studies.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>30</b>
<b>Major Courses</b>	<b>36</b>
<b>Elective Courses</b>	<b>6</b>

#### General Education Courses (48 credits)

SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
SPAN 331	Public Speaking	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research And Writing	3
MATH 120	Introductory Algebra	3
BIOL 101	Introduction to Biological Science I	3
BIOL 102	Introduction to Biological Science II	3
HUMA 111	Civilizations and Universal Culture I	3 HUMA
112	Civilizations and Universal Culture II	3
HIST 253	History of Puerto Rico (Compendium)	3
HIST 273	History of the United States of America	3
SOSC 111	Individual, Community, Government and Social Responsibility I	3
SOSC 112	Individuals, Community, Government and Social Responsibility II	3

#### Core Courses (30 credits)

STAT 300	Elements of Statistics I	3
----------	--------------------------	---

ECON 123	Economic Principles and Problems (Compendium)	3
POSC 380	Constitutional Law	3
PSYC 123	General Psychology (Compendium)	3
PSYC 350	Principles of Psychopathology	3
SOSC 320	Social Research Techniques I	3
SOCI 325	Social of Deviance	3
SOCI 358	Social Problems of Puerto Rico	3
FSSS 105	Freshmen Seminar	3
GEOG 205	Global Communities and Resources	3

#### Major Courses (36 credits)

CRIM 205	Introduction to Criminology	3
CRIM 300	Criminal Law	3
CRIM 305	Criminal Justice System in Puerto Rico	3
CRIM 320	Criminal Investigation Techniques	3
CRIM 325	Juvenile Delinquency in Puerto Rico	3
CRIM 327	Correctional Program:  Administration Principles	3
CRIM 400	Criminal Procedure	3
CRIM 415	Evidence	3

CRIM 450	Legal Medicine	3	SOCI 358	Social Problems Puerto Rico	3	STAT 300	3
CRIM 475	Practicum	3	Elements of Statistics I		3		

**Free Elective Courses (6 credits)**

**Major Courses (50 credits)**

SOWO 200	Introduction to Social Work	
SOWO 211	Human Behavior Social Environment 1	
SOWO 212	Human Behavior Environment 2	3
SOWO 300	Social Policy	3
SOWO 311	Social Work Methodology	3
SOWO 312	Social Work Methodology II: Individual and Family	3
SOWO 313	Interview and Documentation in Social Work	3
SOWO 314	Group Intervention Metodology	3
SOWO 315	Community Intervention Metodology	3
SOWO 320	Social Research Techniques	3
SOWO 325	Introduction to Social Gerontology	3
SOWO 441	Practicum Seminar I	3
SOWO 451	Supervised Practice I	4
SOWO 442	Practicum Seminar II	3
SOWO 452	Supervised Practice II	4
SOWO 330	Seminar: Current Topics in Social Work	3

**Elective Courses (3 credits)**

**BACHELOR'S DEGREE IN ARTS IN HUMANITIES WITH CONCENTRATION IN SOCIO-HUMANISTIC STUDIES**

Provide a solid foundation in the humanities and social sciences that will enable you to attend social situations and pursue graduate studies.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>54</b>
<b>Core Courses</b>	<b>18</b>
<b>Major Courses</b>	<b>18</b>
<b>Elective Courses</b>	<b>30</b>

**General Education Courses (54 credits)**

SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
SPAN 331	Public Speaking	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
MATH 120	Introductory Algebra	3

**BACHELOR'S DEGREE IN ARTS WITH CONCENTRATION IN SOCIAL WORK**

This program provides a knowledge base on the relationship and influence of biopsychosocial and spiritual factors in social systems and social policies that frame professional practice. It allows the critical analysis of the structural and functional aspects of the systems and the manifestations of oppression and human diversity in these scenarios. It facilitates the identification and application of the phases of the aid process from a generalist perspective, as well as the identification of the ethical principles guiding social research and the possible dilemmas that may arise.

<b>Total Credits</b>	<b>122</b>
<b>General Education Courses</b>	<b>42</b>
<b>Core Courses</b>	<b>27</b>
<b>Major Courses</b>	<b>50</b>
<b>Elective Courses</b>	<b>3</b>

**General Education Courses (42 credits)**

SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
SPAN 331	Public Speaking	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research and Writing	3
MATH 120	Introductory Algebra	3
BIOL 101	Introduction to Biological Science I	3
BIOL 102	Introduction to Biological Science II	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
SOSC 111	Individuals, Community, Government and Social Responsibility I	3
SOSC 112	Individuals, Community, Government and Social Responsibility II	3

<b>Core Courses (27 credits)</b>	FSSS 105 Freshman Seminar	3
PSYC 123	General Psychology (Compendium)	3
HIST 253	History of Puerto Rico (Compendium)	3
ECON 123	Economics Principles & Problems (Compendium)	3
POSC 380	Constitutional Law	3
PSYC 225	Social Psychology	3
GEOG 202	Human Geography	3

BIOL 101	Introduction to Biological Science I	3
BIOL 102	Introduction to Biological Science II	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
HIST 253	History of Puerto Rico (Compendium)	3
SOSC 111	Individuals, Community, Government and Social Responsibility I	3
SOSC 112	Individuals, Community, Government and Social Responsibility II	3
PHIL 201	Introduction to Philosophy I	3
HIST 273	History of the United States of America	3
ART 101	Art Appreciation	3

**Core Courses (18 credits)**

STAT 300	Social Research Techniques I	3
FSSS 105	Freshmen Seminar	3
SOCI 358	Social Problems of Puerto Rico	3
SOCI 325	Deviation Sociology	3
POSC 380	Constitutional Law	3
POSC 390	International Political Systems	3

**Major Courses (18 credits)**

PSYC 123	General Psychology (Compendium)	3
SOCI 203	Sociology Principles (Compendium)	3
POSC 387	Law and Society	3
SPAN 461	Hispanic-american Literature	3
SOSC 320	Social Research Techniques I	3
GEOG 205	Global Communities and Resources	3

**Major Elective Courses (18 credits)**

The students and their Mentors will select the major Elective courses.

**Free Elective Courses (12 credits)**

**AREA OF COMMUNICATIONS**

**Mission**

News, information, and ideas are vital to democratic society and to the civic and economic well being of Puerto Rico. The Department of Communication seeks to prepare students with the knowledge, skills and integrity to contribute to the communication needs and wants of the communities they serve. The Department seeks particularly to represent in the industry and profession the experience, perspectives and aspirations of graduates from lower income groups in Puerto Rico, many of whom are firstgeneration college students.

**Vision**

The Department of Communications of the Universidad Ana G. Méndez-Recinto de Gurabo will be an accredited and leading institution in Puerto Rico and Latin America, composed of a community of ethical, creative, diverse and innovative faculty and students.

**Values and Professional Competences**

1. Understand and apply the principles and laws of freedom of speech and press.
2. Demonstrate an understanding of the history and role of professionals and institutions in shaping communications.
3. Demonstrate an understanding of gender, race, ethnicity, sexual orientation.
4. Demonstrate an understanding of the diversity of peoples and cultures and of the significance and impact of mass communications in a global society.
5. Demonstrate an understanding of professional ethical principles and work ethically in pursuit of truth, accuracy, fairness and diversity.
6. Understand concepts and apply theories in the use and presentation of images and information.
7. Think critically, creatively and independently.
8. Conduct research and evaluate information by methods appropriate to the communications professions in which they work .
9. Write correctly and clearly in forms and styles appropriate for the communications professions, audiences and purposes they serve.
10. Critically evaluate their own work and that of others for accuracy and fairness, clarity, appropriate style and grammatical correctness.
11. Apply basic numerical and statistical concepts.
12. Apply tools and technologies appropriate for the communications professions in which they work, and to understand the digital world.

**BACHELOR'S DEGREE IN ARTS WITH CONCENTRATION IN COMMUNICATIONS**

This program prepares to work in the media: radio, television, newspapers, internet, etc. You can be a professional of: journalism (print, radio, television, digital), public relations or advertising, professions of high creativity.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>33</b>
<b>Major Courses</b>	<b>33</b>
<b>Elective Courses</b>	<b>9</b>

<b>General Education Courses</b>		<b>(48 credits)</b>	
FSSS 105	Freshman Seminar	3	
SPAN 152	Fundamentals of Reading and Writing	3	
SPAN 250	Writing Techniques	3	
SPAN 255	Research and Writing	3	
SPAN 331	Public Speaking	3	
ENGL 152	Fundamentals of Reading and Writing	3	
ENGL 153	Advanced Communicative English	3	
ENGL 231	Research And Writing	3	
MATH 120	Introductory Algebra	3	
INSC 101	Integrated Science I	3	
INSC 102	Integrated Science II	3	
HUMA 111	Civilizations and Universal Culture I	3	
HUMA 112	Civilizations and Universal Culture II	3	
SOSC 111	Individuals, Community, Government and Social		
Respon	SOSC 112	Individuals, Community, Government	
		and Social Responsibility II	3
PSYC 123	General Psychology (Compendium)	3	
<b>Core Courses</b>		<b>(33 credits)</b>	
STAT 300	Elements of Statistics I	3	SOSC 320
	Social Research Techniques	3	ECON 207
	Order Economy	3	New World
GEOG 205	Global Communities and Resources	3	
SOCI 358	Social Problems of Puerto Rico	3	COMM
205	Social Communication Theories	3	
COMM 210	Communication: Legal and Ethical		
	Aspects	3	
COMM 212	Development and Management of		
	Media Enterprises	3	
COMM 320	Introduction to Public Relations	3	COMM 325
	Introduction to Advertising	3	COMM 400
	Television	3	Principles of
<b>Major Courses</b>		<b>(33 credits)</b>	
COMM 230	Fundamental Principles for the		
	Journalist	3	
COMM 305	Writing Style in Journalism	3	COMM 307
	for the Media	3	Writing
COMM 311	Introduction to Photojournalism	3	COMM
330	Design and Publishing Web Pages	3	
COMM 430	Journalism Workshop	3	COMM 380
	Principles	3	Broadcasting
COMM 385	Broadcasting Production and Direction	3	COMM
420	Writing for Public Relations	3	COMM
	Communications Media I	3	COMU 203
	Production I	3	Audiovisual
	COMM 450	Supervised Practicum in	
		Communication	3
<b>Elective Courses</b>		<b>(9 credits)</b>	

**BACHELOR'S DEGREE IN COMMUNICATION WITH  
CONCENTRATION IN FILM PRODUCTION, VIDEO AND  
MULTIMEDIA**

This program prepares for the production and direction, creative of cinema, video and multimedia, as well as for the handling of the cinematographic language. You can be a professional in the film, video, television and internet applications industries.

<b>Total Credits</b>	<b>123</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b>	<b>33</b>
<b>Major Courses</b>	<b>33</b>
<b>Elective Courses</b>	<b>9</b>

**General Education Courses (42 credits)**

FSSS 105	Freshman Seminar	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
SPAN 331	Public Speaking	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	
ENGL 231	Research And Writing	
MATH 120	Introductory Algebra	3
INSC 101	Integrated Science I	3
INSC 102	Integrated Science II	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
SOSC 111	Individuals, Community, Government and Social	
	Responsibi	
SOSC 112	Individuals, Community, Government and Social	
	Responsibi	
PSYC 123	General Psychology (Compendium)	3

**Core Courses (33 credits)**

STAT 300	Elements of Statistics I	3	SOSC 320
	Social Research Techniques	3	ECON 207
	New World Order Economy	3	
GEOG 205	Global Communities and Resources		
3	SOCI 358	Social Problems of Puerto Rico	3
COMM 205	Social Communication Theories	3	
COMM 210	Communication: Legal and Ethical		
	Aspects	3	
COMM 212	Development and Management of		
	Media Enterprises	3	

COMM 325 Introduction to Advertising 3  
 Introduction to Public Relations 3  
 Principles of Television 3

**Major Courses (33 credits)**

COMU 203 Audiovisual Communications Media I 3  
 COMU 308 Writing and Style for Audiovisual  
 Communications 3  
 COMU 313 Introduction to Digital Camera 3  
 Film Direction and Production I 3  
 COMU 333 Editing Process 3  
 COMU 315 Lighting for Audiovisual Media 3  
 Film Production and Direction II 3  
 PROD 303 Production and Advanced  
 Management for Media Communication III 3  
 COMM 330 Design and Publishing Web Pages  
 3  
 PROD 350 Sound Production for  
 Audiovisual

**Core Courses 33**  
**Major Courses 33**  
**Elective Courses 9**

**General Education Courses (48 credits)**

SPAN 152 Fundamentals of Reading and Writing 3  
 SPAN 250 Writing Techniques 3  
 SPAN 255 Research and Writing 3  
 SPAN 331 Public Speaking 3  
 ENGL 152 Fundamentals of Reading and Writing 3  
 ENGL 153 Advanced Communicative English 3  
 ENGL 231 Research And Writing 3  
 MATH 120 Introductory Algebra 3  
 FSSS 105 Freshman Seminar 3  
 SOSC 111 Individuals, Community, Government  
 and Social Responsibility I 3  
 SOSC 112 Individuals, Community, Government  
 and Social Responsibility II 3  
 HUMA 111 Civilizations and Universal Culture I 3  
 INSC 101 Integrated Science I 3  
 PSYC 123 General Psychology (Compendium) 3

**Core Courses (33 credits)**

GEOG 205 Global Communities and Resources 3  
 STAT 300 Elements of Statistics I 3  
 COMM 210 Communication: Legal and Ethical  
 Aspects 3  
 COMM 212 Development and management of  
 media enterprises 3

Media 3  
 COMM 450 Supervised Practicum in  
 Communication 3

**Elective Courses (9 credits)**

**BACHELOR'S DEGREE IN COMMUNICATION IN DIGITAL JOURNALISM**

This program prepares journalists to develop news content for digital platforms, both traditional media: radio, television and the press, as well as emerging media in the industry.

**Total Credits 123**  
**General Education Courses 48**

3 SOCI 358 Social Problems of Puerto Rico  
 Social Research Techniques 3  
 COMM 205

COMM 325 Introduction to Advertising Principles of Television 3  
 ECON 207 3  
 COMM 320 Introduction to Public Relations New World Order Economy 3  
 COMM 400 3

**Major Courses (33 credits)**

COMM 250 Digital Journalism 3  
 COMM 230 Fundamental Principles for the Journalist 3  
 COMM 311 Introduction to Photojournalism 3  
 Introduction to Digital Camera 3  
 COMM 305 Writing Style in Journalism 3  
 COMU 313 3  
 COMM 330 Design and Publishing of Electronic Pages 3  
 PROD 205 Film Direction and Production I 3  
 COMM 430 Journalism Workshop 3  
 COMM 450 Supervised Practicum in Communication 3  
 COMU 308 Writing and Style for Audiovisual Communications 3  
 COMM 380 Broadcasting Principles 3

**Elective Courses (9 credits)**

**BACHELOR'S DEGREE IN COMMUNICATION WITH CONCENTRATION IN PUBLIC RELATIONS AND ADVERTISING**

and Social Responsibility I 3  
 SOSC 112 Individuals, Community, Government and Social Responsibility II 3  
 PSYC 123 General Psychology (Compendium) 3

**Core Courses (33 credits)**

STAT 300 Elements of Statistics I 3  
 SOSC 320 Social Research Techniques 3  
 ECON 207 New World Order Economy 3  
 GEOG 205 Global Communities and Resources 3  
 SOCI 358 Social Problems of Puerto Rico 3  
 COMM 205 Social Communication Theories 3  
 COMM 210 Communication: Legal and Ethical Aspects 3  
 COMM 212 Development and management of media enterprises 3  
 COMM 400 Principles of Television Introduction to Public Relations 3  
 COMM 320 Introduction to Advertising 3  
 COMM 325 3

**Major Courses (36 credits)**

COMM 230 Fundamental Principles of Journalistic Writing 3  
 COMM 390 Strategic Media Planning 3  
 COMM 311 Photojournalism 3  
 COMM 307 Writing for the Media 3  
 COMM 420 Writing for Public Relations  
 COMM 380 Principles of Radio  
 COMM 435 Crisis Communication in Public Relations 3

This program prepares students to work in the field of public relations and advertising, both in public and private agencies and / or in their own companies. You can work on developing and executing strategies in these fields.

**Total Credits 126**  
**General Education Courses 48**  
**Core Courses 33**  
**Major Courses 36**  
**Elective Courses 9**

**General Education Courses (48 credits)**

FSSS 105 Freshman Seminar 3  
 SPAN 152 Fundamentals of Reading and Writing 3  
 SPAN 250 Writing Techniques 3  
 SPAN 255 Research and Writing 3  
 SPAN 331 Public Speaking 3  
 ENGL 152 Fundamentals of Reading and Writing 3  
 ENGL 153 Advanced Communicative English 3  
 ENGL 231 Research And Writing 3  
 MATH 120 Introductory Algebra 3  
 INSC 101 Integrated Science I 3  
 INSC 102 Integrated Science II 3  
 HUMA 111 Civilizations and Universal Culture I 3  
 HUMA 112 Civilizations and Universal Culture II 3  
 SOSC 111 Individuals, Community, Government

COMM 330 Design and Publishing Web Pages 3	COMM 445 Advertising Campaigns 3	COMM 440 Public Relations Campaigns 3
COMM 450 Supervised Practicum in Communication	3	
PROD 205 Film Direction and Production I	3	

**Elective Courses (9 credits)**

### COURSE DESCRIPTIONS

(Courses marked with @ could be offered in both modalities, traditional or on-line.)

**ANTH 205  
General Anthropology  
Three Credits**

The course is a general introduction to the biological and cultural evolution of the human species. Topics covered include principles, theories, process; methods and techniques used by the anthropologist in order to explain changes, as well as stability, adaptation and extinction of the human species.

**COMM 205 @  
Social Communication Theories  
Three Credits**

The course covers diverse theoretical concepts and their relationship with the social impact of the media. Emphasis is placed on understanding the mechanisms and procedures used to manipulate information.

**COMM 210  
Communication: Legal and Ethical Aspects  
Three Credits**

The course will analyze the legislation and regulations related to the media and their ethical and professional responsibilities.

**COMM 211  
Communication Ethics  
Three Credits**

The course deals with ethical and sociological principles in mass communications. Emphasis is placed on basic problems inherent in freedom of expression and freedom of the press, and provides the student with the necessary conceptual tools to understand them. Primary sources of information will be studied, among others, the Bill of Rights of the Constitution of Puerto Rico, the First Amendment to the Constitution of the United States, and current codes of ethics.

**COMM 212  
Development and management of media enterprises  
Three Credits**

This course provides students basic skills in the development and management of a company in the field of communications. Historical and theoretical aspects are studied, and the development of strategies for the audiovisual industries

**COMM 230 @  
Fundamental Principles for the Journalist  
Three Credits**

The aim of this course is to develop in the students' knowledge and skills necessary in the preparation of written documents relevant to all areas of mass media communications. The first part of the course is fundamentally about writing principles. Through workshops and seminars, the second part provides students ample opportunities to put into practice all concepts learned.

**COMM 250  
Digital Journalism  
Three Credits**

In this course students will develop their skills and knowledge on how to write correctly and journalistically for the digital media. The first part of the course teaching conceived changes that digital advances have resulted in journalism. The second part foresees an ample exercise of writing for digital media, which intends to take the lessons learned from the elaboration, discussion and analysis of journalism texts produced by students and the press, and put them into practice.

**COMM 305  
Writing Style in Journalism  
Three Credits**

The course offers the student the basic techniques of simple news editing. It also defines the concept of news, its value and importance.

**COMM 307  
Writing for the Media  
Three Credits**

The course centers on a theoretical and practical view of the principles of scriptwriting. Television, radio and movies are included.

**COMM 310  
Communication Technology: Cultural, Educational,**

**and Economic Impact****Three Credits**

The course deals with communication technology and its impact on today's world: the media for the message. Topics include the digital telephone, television, computers, and the impact of current developments in the field of communication.

**COMM 311****Photojournalism****Three Credits**

This course will enable students to obtain real experience in the field of photojournalism. Students will examine technological changes relating to photography and the impact these changes have had on mass media. In-class discussion combined with practical experiences will enable

students to learn about photographic theories and photojournalism techniques such as: shutter speed, image composition, among others. At the end of the course, students will prepare a portfolio containing different journalistic images, in addition to a field experience covering hard and soft news.

**COMM 320**  
**Introduction to Public Relations**  
**Three Credits**

The course deals with basic elements of public relations theory and practice. It includes analyses of the different definitions proposed by the experts and the function of public relations in the free world.

**COMM 325**  
**Introduction to Advertising**  
**Three Credits**

The course centers on the study of advertising as a social function. It includes analysis and selection of the advertising method and its creative aspect.

**COMM 330**  
**Design and Publishing of Electronic Pages**  
**Three Credits**

In this course students will develop their skills and knowledge appropriate to design and publish web pages. The first part of the course teaching of the nature of the cyber network and its interaction with the world of communications, especially the journalism. The second part foresees an ample exercise of design and publishing web pages on the internet, and the discussion and analysis of the publications made by students and digital media.

**COMM 350**  
**Advertising Methods**  
**Three Credits**

The course deals with the phases involved in the creation and presentation of the advertising campaign. It emphasizes the study of its objectives, plans and strategies.

**COMM 360**  
**Advanced Public Relations**  
**Three Credits**

The course includes research methods, conceptualization of the public relations program, and the specializations of the profession in accordance with the types of public.

**COMM 380**  
**Broadcasting Principles**  
**Three Credits**

The course deals with radio broadcasting as a means of social communication. Topics include its social and historical context and theoretical and practical applications.

**COMM 385**  
**Broadcasting Production and Direction**  
**Three Credits**

The course is a workshop in audio equipment. It includes recording and mixing, and the elaboration of the script for newscasts and educational programs.

**COMM 390**  
**Strategic Media Planning**  
**Three Credits**

Theoretical and methodological foundations of strategic media planning in advertising are studied as well as the market and its components. Students will elaborate, with the guidance of the professor, a strategic media plan for advertising presenting at least one of the methodologies used for design, implementation and evaluation.

**COMM 400**  
**Principles of Television**  
**Three Credits**

The course deals with fundamentals concepts of television; both theoretical and practical aspects will be considered. Emphasis is placed on the history, social impact, and application of TV production.

**COMM 410**  
**Television Production**  
**Three Credits**

The course covers practical techniques for television production. It includes equipment, direction, and coordination with the technical staff.

**COMM 420**  
**Writing for Public Relations**  
**Three Credits**

The course studies the definition and structure of the most used texts in the field of public relations, including press releases, blogs, speeches, social networking, press kits and handbook for crisis management. The basic techniques for writing and editing are also addressed.

**COMM 430**  
**Journalism Workshop**  
**Three Credits**

The course is an advanced journalism workshop. It includes news publication, diagramming, editing of headlines, and the printing process of a real publication.

**COMM 435**

### **Crisis Communication in Public Relations**

#### **Three Credits**

Study of fundamental theories of crisis communication as well as the essential elements and the relationship between organizational crisis and media and leadership in crisis management. They will also study historically relevant cases, the communication management of organizational crisis and crisis management of these different types of responses. A plan of prevention and crisis communication in organizations is developed.

### **COMM 440**

#### **Public Relations Campaigns**

#### **Three Credits**

Analysis of cases of Public Relations in organizations. Diagnosis of Public Relations in organizations, and using this as a basis, students will undertake the design, implementation and evaluation of PR campaigns, with the advice of the professor.

### **COMM 455**

#### **Advertising Campaigns**

#### **Three Credits**

Analysis of cases of Advertising in organizations. Diagnosis of Advertising in organizations, and using this as a basis, students will undertake the design, implementation and evaluation of advertising campaigns, with the advice of the Professor.

### **COMM 450**

#### **Supervised Practicum in Communication**

#### **Three Credits**

The course is a work experience in an area of communication, in collaboration with other professionals in the media.

### **COMU 201**

#### **Audiovisual Communications Media I**

#### **Three Credits**

Introductory course and discussion of the nature of contemporary audiovisual media and the diverse ways of seeing which are fundamental in the differences between communication and signification. Study and analysis of the filmic text, semiotics and aesthetics in modern, mass and postmodern societies. Study of the relation between ways of seeing, style and ethics.

### **COMU 203**

#### **Audiovisual Communications Media I**

#### **Three Credits**

Introductory course and discussion of the nature of contemporary audiovisual media and the diverse ways of seeing which are fundamental in the differences between

communication and signification. Study and analysis of the filmic text, semiotics and aesthetics in modern, mass and postmodernist societies. Study of the relation between ways of seeing, style and ethics.

### **COMU 303**

#### **Image Manipulation I**

#### **Three Credits**

Introduction of the concepts of the virtual and multimedia to understand and implement the computer manipulated reality which is usual in video, film and contemporary multimedia. Presents the animation of texts, photographs and figure by way of keyframes, plug-ins, pre-sets and programming. Discusses and applies the skills to use FINAL CUT 7 and AFTER EFFECTS to implement the concepts of the virtual and multimedia.

### **COMU 308**

#### **Writing and Style for Audiovisual Communications**

#### **Three Credits**

Teaching of writing and style of audiovisual communications scripts as mechanisms in the creation of audiovisual executions for film, video and multimedia. Studies the practice and mechanism of storyboarding, and, on the other, the mechanism and practice of audiovisual scripts. Presents the writing formats which are used in musical videos, short films and films as they express themselves as storyboards and audiovisual scripts. Presents the photographic, editing, filmic planes and narrative devices which are used in storyboards and scripts in the audiovisual industries. STORYBOARD QUICK and FINAL DRAFT are the relevant softwares of the course.

### **COMU 313**

#### **Introduction to the Digital Camera**

#### **Three Credits**

Introduces the practice and theory of digital photography with the still and moving image photography. The concepts of composition, illumination, depth of field and perspective are studied and applied to still and the moving image photography. Instructs on the ethics, creativity and the social nature of the photographer and the cinematographer. Study of the concept of "plane" as it is used in the thinking of the still and the moving image in film, video and multimedia.

### **COMU 315**

#### **Lighting for Audiovisual Media**

#### **Three Credits**

Study of lighting techniques and the instruments used for implementing them in film making. Study of colorization for film, video and multimedia in relation to the idea of communication and to its technical aspects. Study of

COLORS by Apple for the colorization and correction of the moving image.

**COMU 333**  
**Editing Process**  
**Three Credits**

Presents the theory of the moving image editing process through the concepts of montage, lineal editing, flash black and the different kinds of cuts, transitions, plug-ins and sequences which are traditional in cinema, video production and multimedia. Discusses and applies the skills for the use of FINAL CUT 7 of the APPLE platform to implement the concepts of the editing process for cinema, video and multimedia.

**COMU 403**  
**Audiovisual Communications Media II**  
**Three Credits**

Study of style as a cultural problem and its relation to audiovisual communications. Study of the forms of stilization of the digital image through the means of the computer and by way of COLOR from the APPLE platform and COMBUSTION of the SGI platform. Study of the theory of color and the texture of the digital image. Presentation of the possibilities of style as a cultural problem as far as it is finally a technical problem. Introductions of the basics of editing and those of the writing for film, video and multimedia as they are related to the cultural problem of style in film, video and multimedia.

**CRIM 205**  
**Introduction to Criminology**  
**Three Credits**

The course presents an outline of the field, its development, present trends, and specializations. Topics include criminology as an empirical science, crime, the delinquent, and the victim, as well as investigation and criminal statistics.

**CRIM 300**  
**Criminal Law**  
**Three Credits**

The course deals with general principles of the Criminal Code. Topics include types of crimes, penalties, and security measures, as well as comparative study of cases to analyze the elements of a crime.

**CRIM 305**  
**Criminal Justice System in Puerto Rico**  
**Three Credits**

The course is an overview of the criminal justice system in Puerto Rico. Topics include a comparative approach to the legal framework, the system's structures, functions,

procedures, relationships to other institutions and its role in democracy.

**CRIM 320**  
**Criminal Investigation Techniques**  
**Three Credits**

The course centers on scientific methods of investigation within a legal framework. Case studies are thoroughly analyzed. Observation techniques and evaluation of relevant information will be discussed. Modern methods of locating, obtaining and interpreting information will be presented.

**CRIM 325**  
**Juvenile Delinquency in Puerto Rico**  
**Three Credits**

The course centers on the definition of the problems of juvenile delinquency in Puerto Rico. Topics include social, cultural, psychological and legal aspects; causes and prevention; prosecution and treatment of the juvenile delinquent.

**CRIM 327**  
**Correctional Programs: Administration Principles**  
**Three Credits**

The course deals with the principles of the correctional system in Puerto Rico: philosophy, legal framework and regulations. Topics include structures, functions and procedures in the administration of penal institutions, the parole program, the adult probation system, the classification program, the diagnosis and treatment of inmates. The area of custody programs and treatment of minors is also discussed.

**CRIM 330**  
**Administration and Organization Policy**  
**Three Credits**

The course centers on the study of principles of organization and administration of the police force in Puerto Rico. Emphasis is placed on organizational theory, administrative procedures, administration and supervision programs.

**CRIM 400**  
**Criminal Procedures**  
**Three Credits**

The course is an introduction to the understanding and application of criminal procedures and case law, the beginning of judicial action and its development by stages. Emphasis is placed on the rights of the accused.

**CRIM 415**  
**Evidence**

**Three Credits**

The course deals with rules of evidence and their application in criminal cases. Topics include techniques for the presentation of evidence, preparation of cases, and court testimony.

**CRIM 420****Seminar: Case Study in Police Administration****Three Credits**

The course covers legal and institutional approaches to administrative case through case studies. Topics include procedures and adjudication.

**CRIM 425 - 426****Criminalistic I and II****Six Credits**

The course deals with methods, techniques, and procedures used in gathering, securing and analyzing evidence in criminal cases. Identification and subsequent presentation in court will be discussed.

**CRIM 430****Correctional System of Puerto Rico****Three Credits**

The course consists of the presentation and discussion of current conditions in the Puerto Rican correctional system. It includes legal, organizational and operational aspects.

**CRIM 435****Case Preparation and Testimony****Three Credits**

The course deals with the development of skills needed for preparing reports and for procedural handling of evidence. Presentation of evidence and testimony is emphasized.

**CRIM 440****Seminar: Prevention, Prosecution and Treatment****Three Credits**

The course centers on the discussion of fundamental problems in the prevention of crime, prosecution, custody and treatment of the offender. Topics include legal, social, cultural, physical, human and economic resources, as well as participation and commitment of the community.

**CRIM 450****Legal Medicine****Three Credits**

The course deals with the legal aspects of medicine. Medical and legal cases will be discussed, including cases of malpractice. Emphasis is placed on case discussion, laboratory practice, techniques and theories related to legal medicine.

**CRIM 465****Seminar: Civil Rights of the Accused****Three Credits**

The course is an analytical interpretation of Section II, Article 2 of the Commonwealth Constitution, which establishes the rights of the accused in criminal proceedings.

**CRIM 475****Practicum****Three Credits**

The course is an integration of theory and experience through observation in a judicial or correctional institution.

**ECON 121-122****Economic Principles and Problems I and II****Six Credits**

The course deals with economic theories and practice. Topics include value and price, exchange, distribution, production, employment, national income, international commerce, public expenses, economic cycles, social welfare and influence of government on the economy.

**ECON 123****Economics Principles and Problems (Compendium)****Three Credits**

The course covers economic theories, value and price, distribution, protection and the role of government in the economy.

**ECON 207****New World Order Economy****Three Credits**

The course includes a diagnostic view of contemporary economic phases and their social, environmental and political effects. It also includes discussion of fundamental economic perspectives for future societies.

**ECON 351****History of Economic Thought****Three Credits**

The course centers on theoretical analysis through works of leading economists.

**ECON 253****Economy Development of Puerto Rico****Three Credits**

The course covers characteristics and trends of the Puerto Rican economy. It includes an analysis of the local economic structure and its relationship to international economics.

**ECON 363****Economics Trends in Latin America****Three Credits**

The course centers on political and institutional forces and problems that affect the development of Latin American countries.

**ECON 373**

**Economic Development of the United States**

**Three Credits**

The course covers trends and development of the economy of the United States. National and international growth will be emphasized.

**ECON 385**

**Development and Underdevelopment**

**Three Credits**

The course deals with problems, characteristics and policies of the underdeveloped countries. Theories of economic growth and their application in Puerto Rico are emphasized.

**ECON 400**

**Microeconomic Theory**

**Three Credits**

The course deals with determining national income and employment, price and growth rate level in the economic system. Topics include spending and saving, private investment, prosperity and depression, money, and implications of national income public policy.

**ECON 420**

**International Economics**

**Three Credits**

The course deals with international trade, including problems and policies, balance of payments, debts, international monetary problems, and international financial organizations.

**GEOG 201**

**Physical Geography**

**Three Credits**

The course deals with principles of geography and their application to the environment, climate, soil, vegetation and natural resources.

**GEOG 202**

**Human Geography**

**Three Credits**

The course is an introduction to human and cultural geography. Topics include variation of human traits, diversity of economic systems, and population changes.

**GEOG 205 @**

**Global Communities and Resources:**

**A Critical View**

**Three Credits**

The course is an introduction to human problems in the contemporary world. Physical geography and different theories related to this phenomenon are considered. Implications of problems related to the economical and political development of Puerto Rican society will also be discussed.

**GEOG 207**

**Historical Geography**

**Three Credits**

The course deals with the relationship between historical events and their geographic setting.

**GEOG 225**

**Geography of Puerto Rico**

**Three Credits**

The course centers on physical, biotic, and human aspects of Puerto Rico, its regions and its environment.

**GEOG 263**

**Central, South America and the Caribbean**

**Geography**

**Three Credits**

The course deals with geographical regions, natural resources, government, climate, vegetation, soil, population, economic structure, and infrastructure, as well as their relationship to other regions of the world.

**GEOG 273**

**North American Geography**

**Three Credits**

The course centers on the United States and Canada. Topics include physical characteristics, economic resources, climate, culture, and economic development.

**GRAD 201**

**Graphic Communication Media**

**Three Credits**

The course deals with foundations and concepts of the graphic communications. Students study the different graphic communications media such as digital video for multimedia works, graphic design, typography, effective print communication, design and composition of pages, illustrations, as well as the foundations of design. Students stay current and study aspects and new developments in the publishing industry. Topics include technological development and how to stay in contact with traditional operations, in view of emerging demands in methods and design creations, management, programming and distribution.

**GRAD 205****Introduction to the Computer in Graphic Arts****Three Credits**

This course introduces the components (hardware and software) of computer systems (IBM compatible and Macintosh). It also develops basic command of the keyboard. In addition, students acquire problem-solving techniques and learn how to be productive when using information systems.

**GRAD 207****Graphic Design****Three Credits**

The course covers theory, analysis, and practice in the development of design. Students will develop the skills needed for the preparation of thumbnails and rough layouts. Each type of layout and its function in the creative process is analyzed. The course includes computerized layout design, using PageMaker, Freehand, and Basic Photoshop.

**GRAD 300****Typography and Design****Three Credits**

The course centers on theory, analysis, and practice in the use of various forms of typography. Rules of typographic composition are analyzed and applied to both manual and computerized graphic design. Basic Photoshop and Illustrator programs are used.

**GRAD 305****Image Preparation****Three Credits**

The course deals with basic principles of copy preparation based on knowledge acquired in Graphic Arts (AGRA 3022). Emphasis is placed on the study, analysis, and application of methods and elements for developing final copies for reproduction purposes. Basic Photoshop, Freehand and PageMaker programs are used.

**GRAD 306****Introduction to Digital Image****Three Credits**

The course is an introduction to the theory and practice of digital photography focusing on visual communications media, using digital and conventional cameras along with the Photoshop program for editing images. Students will acquire a reasonable command of the process of digital image creation, which will allow them to produce works in the print media, the arts and advertising.

**GRAD 320****Digital Photography****Three Credits**

This is an introductory course in the use and handling of digital cameras to take fixed or moving pictures. The computer is used with Adobe Photoshop, which is the primary program to edit photo images and webpage design. Students will use the digital camera to take pictures and the computer to correct color, contrast, image manipulation and size determination. They will have considerable practice in the use of filters, image formats, and applications. In addition, they will use printers to print halftones, duotones, positives, transparencies, and color images.

**GRAD 330****Printing Processes****Three Credits**

This is an introductory course in the principal printing processes in graphic arts. Among the main processes that will be studied are: letterpress, gravure, lithography, flexography, and screen printing. Similarities and differences among different printing processes in the publication industry will be established. In addition, orientation is given to the study and analysis in the selection of the appropriate process to apply in a given situation, considering the number of impressions, colors, cost, finishing operations, inks, and other materials.

**GRAD 400****Introduction to Image Animation****Three Credits**

The course deals with foundations of planning and creation of interactive animation which involves tridimensional scenes and objects. Students will use the computer for the manipulation of objects and tridimensional animation. Basic problems of animation in three dimensions (3D) will be studied. These will include key framing, parenting, visual texture, focus clarity and the movement of the camera. Students will also be trained to plan their projects ahead of time and create storyboards so they can communicate with their clients and direct the production of image animations.

**GRAD 450****Supervised Practice in Graphic Design****Three Credits**

This course of supervised practice will enable the students to relate to a real work experience in the field of graphic design. The students will have the opportunity to apply all of their creative potential, knowledge, skills, abilities and experience acquired throughout their academic preparation. They will work directly with professionals in six areas: Advertising agencies, graphic design studios, printing shops, newspapers, publishers (books and magazines), and companies with print shops. They will have the opportunity

to practice computerized graphic design, digital photography, management and animation of digital images, webpage design, and other tasks related to design.

### **HUMA 115-116**

#### **Introduction to Western Civilization I and II**

##### **Six Credits**

The course is an introduction to Greek and Roman culture. Topics include drama, literature, art and philosophy, as well as the history of Christianity, medieval culture, feudalism, guilds, scholasticism, Romanesque, and gothic-style literature.

### **POSC 201 - 202**

#### **Introduction to Political Science I and II**

##### **Three Credits**

The course deals with the history of political thought. Topics include the formation of the modern state, contemporary political ideology, theory of political institutions, international relations and the means created in the modern state for the participation of citizens.

### **POSC 203**

#### **Principles of Political Science (Compendium)**

##### **Three Credits**

The course centers on the analysis of the modern state, its structure and citizen participation. Political decisionmaking in contemporary societies will be discussed.

### **POSC 253**

#### **Political System of Puerto Rico**

##### **Three Credits**

The course deals with political institutions in Puerto Rico from 1870 to the present. Legal and political evolution from the "Carta Autonómica" to the legislation establishing the elected governorship and the Commonwealth will be discussed.

### **POSC 355**

#### **Legislative Process**

##### **Three Credits**

The course covers the functions and organization of the legislative branch, its relationship to other branches; its powers and limitations, as well as legislative procedures, investigations, reports and case law applicable to the legislative process.

### **POSC 358**

#### **Administrative Law**

### **Three Credits**

The course traces the development of administrative law, as well as administrative action, procedures and agencies, court reviews, interpretation of legislation, regulations and retroactivity. Areas discussed include administrative discretion in policy-making, jurisdiction and investigative powers, as well as notification and hearings, the decisionmaking process and other related topics.

### **POSC 373**

#### **Political System of the United States**

##### **Three Credits**

The course covers the evolution of the federal government, its structure, procedures and functions. Emphasis will be placed on organization, as well as on separation of powers in the legislative, executive and judicial branches.

### **POSC 380**

#### **Constitutional Law**

##### **Three Credits**

The course is an introduction to the constitutional development of Puerto Rico, with emphasis on civil rights provisions in the Constitution.

### **POSC 385**

#### **Civil Rights of Puerto Rico**

##### **Three Credits**

The course deals with statutory, constitutional and Supreme Court case law sources of civil rights guarantees in Puerto Rico. Emphasis is on case studies of contradictory government actions, including legislation limiting the rights.

### **POSC 387**

#### **Law and Society: A Contemporary Vision**

##### **Three Credits**

The course is a study of the relationship between law and society. Topics include a theoretical vision of the legal system in the substantive content of the influence of social factors in its development. The relationship between law and social change will be analyzed.

### **POSC 390**

#### **International Political Systems**

##### **Three Credits**

The course centers on study and discussion of the political systems from an international perspective, and contemporary political ideologies. Emphasis is placed on the study of political behavior, political participation, governance and international relations.

### **POSC 401 - 402**

#### **Comparative Government I and II**

### **Six Credits**

The course is a comparative study of the political and constitutional development of the European nations, centering on their governments' political institutions, their role in international organizations, and international relations.

### **POSC 407**

#### **Political and Constitutional History of Puerto Rico**

#### **Three Credits**

The course deals with the political history of Puerto Rico under Spanish and American rule.

### **POSC 411 - 412**

#### **Political Theory I and II**

#### **Six Credits**

The course centers on the development of political theory. Topics include social and political reality in different areas and their contribution to the development of political thought. Political theories, beliefs and systems of different countries will be discussed.

### **PROD 205**

#### **Film Direction and Production I**

#### **Three Credits**

Theoretical and practical study of the creation of sound identities for cinema and multimedia. Discussion of the techniques for the use of pre-recorded sound, to record location sound for the cinema and to generate musical and sound effects in the studio. PRO TOOLS is central for the course, as are booms and on location recorders.

Presentation of the basic concepts film writing as they are related to sound identities in film, video and multimedia. Presentation of the relation between sound identities and all the other aspects of a visual execution in film, video and multimedia. Realization of audiovisual works, (short films, commercials, documentaries or others).

### **PROD 300**

#### **Film Production and Direction II**

#### **Three Credits**

Instruction of the administrative and production aspects of film, video and multimedia such as: processes of budgeting, shooting and production schedules, funding, the mechanics of the production floor and sets. Study of the skills for the direction of actors, visualization and the film script. Study of the mechanisms which ease the relation of the director and actors and allow the creation of visual and actorial identities by way of gestures, internal, cultural and historic resources of the actor. Study the direction of creative teams and the creation of filmic sets as they are related to the actor function and her characters. Realization of audiovisual works,

(short films, commercials, documentaries or others).

### **PROD 303**

#### **Production and Advanced Management for Media Communication III**

#### **Three Credits**

Advanced and practical study of the administrative and production aspects of audiovisual media communications. Advanced elaboration of the responsibilities and tasks of a film producer from the conception of a production design up to the final projection and distribution of an audiovisual object. Study of the concept, idea and production designs related to independent and low budget film production.

### **PROD 350**

#### **Sound Production for Audiovisual Media**

#### **Three Credits**

Study of audiovisual media communication sound design, editing and production. Practice of the use of sound technologies as the different booms, microphones and set or studio recorders. Study of the techniques of sound editing.

### **PSYC 121-122**

#### **Psychology I and II**

#### **Six Credits**

The course is an introduction to basic theories of human behavior and their relation to social progress and individual growth.

### **PSYC 123 @**

#### **Survey Course in Psychology**

#### **Three Credits**

This course is a condensed version of PSYC 121-122.

### **PSYC 205**

#### **Personal Growth and Development**

#### **Three Credits**

The course emphasizes the dynamics of human behavior, and techniques for effective interpersonal relations. Human activity and mechanisms for personal and social adjustment are analyzed in order to achieve understanding of oneself and others.

### **PSYC 207**

#### **Ethnopsychology and Human Environment**

#### **Three Credits**

The course uses an interdisciplinary approach for studying *lumpen* behavior and the role of the human mind and human values in contemporary Puerto Rican society. Emphasis is placed on critical thinking as a means of examining this phenomenon.

### **PSYC 221**

#### **Child Psychology**

**Three Credits**

Main theories of child development, emphasizing cognition, learning, personality and behavior. Recommended for elementary education students.

**PSYC 222****Adolescent Psychology****Three Credits**

The course deals with adolescent development and behavior, including personality, learning, vocational selection, moral development and social adjustment in Puerto Rican society. Alienation and social commitment will also be discussed.

**PSYC 225****Social Psychology****Three Credits**

The course centers on the relationship between the individual and society. Attitudes, perception of group behavior, prejudices, and conformity will be discussed.

**PSYC 281-282****Development of the Personality I and II****Six Credits**

This is an advanced course on the development of personality. It includes discussion of theories and research on human development from conception through death. The biological, social, psychological and circumstantial forces that shape the individual will be covered. Focus is on early adulthood, maturity and old age.

**PSYC 305****Human Relations and Public Service****Three Credits**

The course deals with the complexity and the dynamics of human relationships. The variables that influence individual behavior in group situations will be studied. Topics include motivation, leadership, communication, resistance to change, and the importance of good human relations in public service.

**PSYC 307****Group Dynamics****Three Credits**

The course covers group dynamics, cohesion, structure, emotional factors, leadership, and communication. The classroom situation is used as a laboratory for the concepts studied.

**PSYC 321****Theories of Personality****Three Credits**

The course deals with theories, problems and research regarding the role of motivational, perceptive, socioeconomic, biological, genetic, somatic, and learning factors in the development of the personality.

**PSYC 325****Introduction to Gerontology****Three Credits**

The course deals with physiological and psychological aspects of aging. Resources for servicing the older citizen in Puerto Rico will be discussed.

**PSYC 330****Measurement Techniques of Personality****Three Credits**

The course centers on techniques for assessing psychological variables, including mental and motor ability, interests, attitudes, and goals. Statistical bases in the construction of scales and normalization of tests will be presented.

**PSYC 343****Psychology of Learning****Three Credits**

The course covers theories of learning as a determinant of behavior. Topics include variables in the learning process, experimentation and application to education. Clinical experience will be provided.

**PSYC 350****Principles of Psychopathology****Three Credits**

The course covers dynamics, diagnosis, and prediction of abnormal behavior. Neuroses, psychotic disorders and personality disturbances such as alcoholism, sexual deviation and others will be discussed. Psychotherapies used in the treatment of abnormal behavior will be analyzed.

**PSYC 355****Industrial Psychology****Three Credits**

The course deals with the application of psychological techniques to industry and business. Emphasis is on promotion and recruitment of personnel. Psychological factors that determine efficiency of industrial organizations will be discussed.

**PSYC 360****Human Sexuality**

### **Three Credits**

This course addresses sexuality as an integral part of human functioning and relationships. Physiological, sociological and psychological aspects of sexual behavior will be covered, including the cultural factors in sexuality, ethical dimensions and sexually transmitted diseases, such as AIDS.

### **PSYC 400**

#### **Experimental Psychology**

#### **Four Credits**

The course is an introduction to experimental methods from a methodological point of view. Topics emphasized include epistemological bases of sciences, ethical issues in conducting experimental research, APA Ethical Standards, scientific and non-scientific approaches to knowledge, and goals of scientific methods. Other topics discussed include independent and dependent age, external validity, experimental and statistical hypothesis, identification of statistically significant effects, elements of descriptive and inferential statistics, treatment effects, experimental treatment, control and experimental groups, and features of the experimental methods. Basic experimental designs discussed include completely randomized, within subject, and factorial designs. Emphasis will be placed on independent group designs, random groups, matched groups and others. Experimental thesis designs will be carefully discussed and applied.

### **PSYC 405**

#### **Physiological Psychology**

#### **Three Credits**

The course covers physiology and human behavior, including the central nervous system, the autonomous nervous system, cortical processes, processes of emotion, motivation, and behavioral disorders with physical etiology. Relationship between learning and psychological processes will be discussed.

### **PSYC 415**

#### **Techniques and Counseling**

#### **Three Credits**

The course centers on counseling techniques and skills. Emphasis is on the discovery and diagnosis of symptoms, therapy and patients' behavior.

### **PSYC 420**

#### **Counseling and Therapy**

#### **Three Credits**

The course aims to prepare the student for giving shortterm therapy, including crisis intervention, reality therapy, and other types of therapy for patients seeking prompt relief from their symptoms. Training will be through group dynamics. The student will be taught to distinguish between

patients or clients who may benefit from this type of assistance, to make a psycho-diagnosis, and to develop an evaluation plan.

### **PSYC 450**

#### **Psychology Integration Seminar**

#### **Two Credits**

The course centers on analyzing psychologists' work and functions in diverse service settings. It includes discussion of the psychologist's Code of Ethics and the most relevant laws involved in the rendering of psychological services. The design and implementation of a community service activity are also included.

### **PUAD 203**

#### **Public Personnel Administration**

#### **Three Credits**

Study of the theoretical, legal and practical aspects of personnel administration. The Commonwealth Personnel Law and its regulations are studied to gauge their impact on Puerto Rico's public administration practices.

### **PUAD 231**

#### **Administration and Supervision for Safety and Security Officers**

#### **Three Credits**

In this course students will learn the basic principles of management and supervision of staff in security area. Students will learn supervisory styles, different types of public and private agencies and their strategies. In addition, students will develop skills in planning and logistic, aimed at managing security, surveillance, protection and services staff.

### **PUAD 310**

#### **Personnel Training**

#### **Three Credits**

Provide the student with an understanding of the importance of training in a large organization and practical view into the management of the training function.

### **PUAD 358**

#### **Administrative Law**

#### **Three Credits**

Study of the doctrines and principles of the administrative law in public administration. Discussion of the relationship between administrative law and the regulation of the executive branch in regard to the role of state. Discussion of the Law 170, Administrative Uniform Procedure Act, and the Law 12, Governmental Ethics Act. Discussion of applicable case law.

### **PUAD 400**

## **Planning and Government**

### **Three Credits**

Analysis of the meaning, the nature, and the utility of planning and its methods. Examination of the tendencies for the understanding of social movements, governmental procedures and the new planning styles.

## **PUAD 405**

### **Tax Policies and Government Budgeting**

#### **Three Credits**

Study of the constitutional, legal and administrative nature of the public budget. Discussion of the budgetary cycle and the formulation, execution and control processes. At the end of the course, students will formulate a budgetary petition.

## **SOCI 201-202**

### **Sociology Principles I and II**

#### **Six Credits**

The course deals with the individual in the social environment, social organization, social change and control. Mental health, juvenile delinquency, crime, unemployment and racial conflict will be discussed. Topics include the influence of institutions, such as the family, the school, the church and the state.

## **SOCI 203**

### **Sociology Principles (Compendium)**

#### **Three Credits**

The course is a compendium of Soci 201-202 for criminology students. Topics include social organization, cultural phenomena, and socialization. Basic institutions, social deviation, stratification, social mobility, social and cultural change will also be discussed.

## **SOCI 216**

### **Contemporary Social Problems**

#### **Three Credits**

Critical review, theoretical and empirical sociological perspective (functionalism, conflict and interactionism) of contemporary social problems, their classification as phenomena or social construction of deviant behavior and the resulting formal and informal social control. Includes the influence of social media and structures in building social problems. Comparative analysis of local and global social problems, possible solutions through citizen action and governmental structures that generate public policy designed to take the same cases, statistical analysis, responsible use of technology and the study of public policy related to the topic will be strategies in the course.

## **SOCI 321**

## **Sociology of Culture**

### **Three Credits**

The course deals with the relationship between society and culture. Concepts of cultural interaction within society will be discussed.

## **SOCI 325**

### **Sociology of Deviance**

#### **Three Credits**

Theories of social deviance. The role of social and cultural values in the definition of deviant behavior. Emphasizes the influence of traditional and modern society in deviant behavior.

## **SOCI 327**

### **Community Development**

#### **Three Credits**

The course centers on the origin and structure of communities, with emphasis on social, economic and technological forces that promote change. Decision-making mechanisms and the role of local leadership will be discussed.

## **SOCI 330**

### **Marriage and Family**

#### **Three Credits**

The course deals with function, patterns and role of marriage and the family. The social and personal problems of the family in a changing society will be discussed. The family's influence on the development of the personality will be included.

## **SOCI 345**

### **Industrial Sociology**

#### **Three Credits**

The course deals with the effects of industrialization on modern society. Topics include relationships between corporations and community, social organization of labor, and labor-management relations.

## **SOCI 350**

### **Sociological Theory**

#### **Three Credits**

The course covers the principal schools of thought and their major exponents. Research techniques are included.

## **SOCI 355**

### **Population Problems**

#### **Three Credits**

The course deals with theories of population, fertility, mortality and migration. The population problem in Puerto Rico and the world will be discussed.

**SOCI 358****Social Problems of Puerto Rico****Three Credits**

The course deals with social problems in contemporary Puerto Rico. Historical perspective on the problems, their causes, public and private problem-solving policies will be discussed. Topics include demographic problems, poverty, educational deprivation, crime, drugs and alcohol and the problems of victims in Puerto Rico.

**FSSS 105****Freshman Seminar****Three Credits**

The course centers on counseling and enabling students regarding their university life. Emphasis is on academic and personal development and forming ethical and socially responsible citizens.

**SOSC 101-102****Introduction Study of Social Sciences I and II****Six Credits**

The course centers on human society. Topics include the individual and his or her relationship to society, collective behavior, Puerto Rico and its relationship to the social and historical development of western civilization. Economic, psychological, sociological, anthropological and political problems of the contemporary world will also be discussed.

**SOSC 320 @****Social Research Techniques****Three Credits**

The course deals with research methods and techniques for the social sciences.

**SOWO 200****Introduction to Social Work****Three Credits**

The course will promote philosophical and practical understanding of social work services. It includes an analysis of the historical development of social work as practiced in Puerto Rico, and the characteristics that distinguish it from other professions related to social welfare.

**SOWO 210****Human Behavior and Social Environment****Three Credits**

The course aims to explore, the relationship between human behavior and social environment, using the social systems approach. Biological, psychological, and social factors influencing such behavior, from the individual to society's social systems, will be discussed.

**SOWO 211****Human Behavior Social Environment 1****Three Credits**

The course deals with the complexity of human behavior within an eco-social systems approach, taking into account the interaction of biological, psychological, social, economic, political, cultural and spiritual aspects. The course gives a multiple, mutual, and multi-directional vision of the causality of human behavior, presenting the general systems theory as it can be applied to all levels (micro, mezzo, and macro) of social systems that are subject to social work intervention. In this course special emphasis is given to the micro individual level as a social system.

**SOWO 212****Human Behavior Environment 2****Three Credits**

Building on the eco-social approach presented in SOWO 211, this course follows the continuum of the micro-mezzomacro levels of intervention. The family is studied as a micro-social system; groups are studied as a mezzo-social system and communities, and organizations and societies as macro-social systems. The structural, functional, and evolutionary aspects of behavior of families and groups, within a context of human diversity, will be studied. Organizations, communities and societies will be examined from an eco-social perspective, integrating the concepts of power, oppression, discrimination, strengths, perspective, and empowerment.

**SOWO 300****Social Policy****Three Credits**

The course covers philosophical and historical foundations of the social welfare system. Dynamics, development and process of social policies in Puerto Rico and their connection with the local cultural, political, and economic system will be discussed.

**SOWO 310****Individual Help or Casework****Three Credits**

The course deals with the skills needed to support practice with individual clients. Emphasis is placed on identification and planning for early intervention to solve individual social problems. The course also promotes the development of helpful practices for record keeping.

**SOWO 311****Social Work Methodology I****Three Credits**

This course fosters the development of the skills, concepts and values needed for a general practice at all levels of

intervention. The professional relationship, the social work interview and associated skills and methods are emphasized.

**SOWO 312**

**Social Work Methodology II: Individuals and Families**

**Three Credits Hour**

The course covers the development of the specific skills and concepts needed for individual and family intervention. Using the problem-solving model, this course emphasizes the phases of assessment, plan of action and intervention of the general method. Intervention with families is studied, using the eco-structural model stressing the particular social problems confronted within the Puerto Rican context. The importance and skills of social work documentation are also covered.

**SOWO 313**

**Interview and Documentation in Social Work**

**Three Credits Hour**

Study of purpose, components and factors of the human communication process, interview and documentation in Social Work. Development of the necessary skills to interview and document the process within the ethical standards of Social Work.

**SOWO 314**

**Group Intervention Metodology**

**Three Credits Hour**

Acquire knowledge and develop skills in the generalist intervention with groups. Discussion of the theoretical and practical aspects of the group intervention method. Analysis of the fundamental principles that guide the professional Social Work intervention with groups.

**SOWO 315**

**Community Intervention Metodology**

**Three Credits Hour**

The course allows the student to acquire fundamental knowledge and develop skills in a generalist intervention with communities. Discussion of the theoretical approaches and applicable models of community interventions. Discussion of the historical evolution of Community Social Work and its development in Puerto Rico.

**SOWO 317**

**Group Dynamics**

**Three Credits**

The course deals with group dynamics, cohesion, structure, and emotional factors. Topics include leadership and communications. The classroom situation is used as a laboratory for the concepts studied.

**SOWO 320**

**Social Research Techniques**

**Three Credits**

This course focuses on the study and application of the scientific method. It also promotes the use of social research methods for solving empirical and theoretical problems in the social sciences.

**SOWO 325**

**Introduction to Social Gerontology**

**Three Credits**

The course covers physiological and psychological aspects of aging. Resources for serving the older citizen in Puerto Rico will be discussed.

**SOWO 330**

**Seminary: Current Topics in Social Work**

**Three Credits**

Analysis of a diversity of current subjects applicable to the generalist practice of the Social Work profession. Discussion of themes such as cultural diversity, diasporas, alternate lifestyles, political and economic processes, postmodern human relations and their impact on the philosophy, knowledge, skills and practice of social work at the undergraduate level. Provides opportunities for students to examine and strengthen their professional and personal values prior to their admittance to Supervised Practicum (SOWO 451-452).

**SOWO 327**

**Community Development**

**Three Credits**

The course deals with the origin and structure of communities, emphasizing social, economic and technological forces that promote change, decision-making mechanisms, and the role of local leadership.

**SOWO 440**

**Seminar**

**Three Credits**

This is an integrative seminar which covers diverse issues, dilemmas, value conflicts, ethics, and techniques associated with the practice of social work. Analysis and oral presentation of controversial issues are presented to stimulate the development of students' analytical and creative capacity.

**SOWO 441**

**Practicum Seminar I**

**Two Credits**

This seminar, which accompanies the Social Work Practicum 1, provides complementary information to the practicum course. Through class discussion, students are provided with the opportunity to apply critical thinking skills to the specific cases and the diverse populations which are confronted in the practicum experience. Using the strengths perspective, the student is encouraged to work towards the elimination of oppression and discrimination. The Generalist Method will be enriched with diverse models of intervention. The legal and ethical aspects of the profession will also be discussed, as well as specific issues relating to the practicum agencies, as they arise.

**SOWO 442**  
**Practicum Seminar II**  
**Two Credits**

This seminar, which accompanies the Social Work Practicum 2, provides complementary information to the practicum course. The seminar emphasizes the following methodological processes: the diagnostic phase, the plan of action, and the termination of the professional relationship. The Generalist Method will be enriched with diverse models of intervention, as needed, in relationship to specific situations encountered in the practicum experience.

**SOWO 450**  
**Social Work Practice**  
**Four Credits**

This supervised practice is an integral part of the social work curriculum. Students are asked to participate in direct service activities, providing them the opportunity to apply theoretical knowledge and skills in a reflective and self-analytical way. During the practice, students initiate their professional experience under the supervision, support, and coordination of an experienced social worker.

**SOWO 451**  
**Supervised Practice I**  
**Four Credits**

Social Work Practicum 1 provides students with practical, hands-on experience so that they may have the opportunity to apply theories, methodologies, and skills learned in the classroom, in an ethical and responsible manner, under the supervision of an experienced professional. The student will be expected to successfully initiate the objectives of the course as presented in the Practicum Manual.

**SOWO 452**  
**Supervised Practice II**  
**Four Credits**

The student will continue the practical, hands-on experience in the Social Work Practicum 2 and will be expected to master and complete

the objectives of the course as presented in the Practicum Manual.

**STAT 300**  
**Elements of Statistics I**  
**Three Credits**

The course deals with statistics for the social sciences student. It includes sampling, averages, mode, median, and probability.

**STAT 301**  
**Elements of Statistics II**  
**Three Credits**

The course deals with statistics as applied to psychology, economics, and other social sciences. Topics include probability and probability curves, games and variance, random variables, statistical inference, nonparametric tests, and correlation coefficient. Experimental design, Baye's Formula, and decision-making theory will be discussed. Multivariable and bivariable lineal analysis will also be presented.



## SCHOOL OF PROFESSIONAL STUDIES

The mission of the AHORA Program of the School of Professional Studies is to provide an accelerated educational process to adult students. The program differs from traditional methods of instruction in that professional experience of participants is incorporated into the classroom to create an interactive, challenging and dynamic environment. Faculty members have professional experience and have been specially prepared to work with adults as innovative educational facilitators. AHORA is designed exclusively for the adult student; it offers a professional environment, as well as integrated, personalized and individualized services. To fulfill this mission, the School of Professional Studies intends to:

1. Promote adults to value continuous learning and increase their contribution to the world of employment
2. Facilitate adult students reaching attaining their educational goals
3. Create a learning community that facilitates building new knowledge which is based on and is applicable to the professional and personal reality of adults
4. Provide integrated student services of quality and easy accessibility to adult students
5. Recruit and develop staff who knows and are able to meet the needs of adult students effectively
6. Integrate technology into the academic, service and administrative processes
7. Develop academic offerings that respond to the present needs of the professional and business world
8. Establish a continuous process of feedback and assessment of all the processes and services.

**Description of the Accelerated Program of Studies** The AHORA Program is accelerated because all of its courses are offered in five or eight week sessions. During each session, classes meet once a week for four hours. The accelerated methodology is based on a learning process shared between the professor and the student. Each student receives a module which serves as a study guide and indicates the assignments and activities that must be completed to prepare for class. Our faculty is specially selected and trained to work with adult students through the accelerated mode, facilitating a class environment where learning is built on experiences and the assignments performed by the students. This model of accelerated studies can be applied to the different academic programs of the institution, to new

academic programs or any other academic program where adult students participate. The courses are offered evenings and Saturdays (morning and afternoon). The student may take a maximum of two classes per session, completing six credits every five or eight weeks. Registration is continuous, with courses beginning fourteen times a year, and the possibility of completing up to fifty-four credits in an academic year. This way, the program provides greater flexibility for students, since they can accelerate their academic progress or design a class program that conforms to the different commitments they may have during the year.

### FACULTY

**Edna Orta** / Instructor  
MBA, Universidad Metropolitana

**José Sánchez** / Associate Professor  
DBA, Universidad del Turabo

## PROGRAMS OF STUDY

### BACHELOR'S DEGREE IN PUBLIC HEALTH WITH CONCENTRATION IN HEALTH SERVICES MANAGEMENT

The graduate of this program will be a professional academically prepared to perform successfully in primary and intermediate management in health service organizations. What distinguishes these professionals are their knowledge in the field of public health, in the field of management and integration of both fields. In this way, it will ensure the fine balance between the provision of public health services and organizational and administrative health.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>48</b>
<b>Core Courses</b> <b>30 Major Courses</b>	<b>36 Elective Courses</b> <b>6</b>

#### General Education Courses (48 credits)

BIOL 103	Survey of Biological Science	3
COIS 201	Data Processing	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research And Writing	3
FSHS 105	Freshman Seminar	3
HIST 253	History of Puerto Rico (Compendium)	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
MATH 199	Quantitative Methods	3
PSYC 123	Psychology	3
SOSC 111	Individuals, Community, Government and Social Responsibility I	3
SOSC 112	Individuals, Community, Government and Social Responsibility II	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3

#### Core Courses (30 credits)

ACCO 111	Introduction to Accounting	3
ECON 123	Economics Principles and Problems (Compendium)	3
ENTR 360	Entrepreneurship 3	3
MANA 210	Management Theory 3	3
MANA 213	Human Resources Administration 3	3
MANA 230	Organizational Behavior 3	3

PUHE 101	Introductions to Public Health and Health Education	3
PUHE 201	Introduction to Biostatistics	3
PUHE 203	Introductions to Epidemiology	3
PUHE 210	Biological Aspects of Human Diseases	3
<b>3 Major Courses (36 credits)</b>		
HESM 110	Health Services Management	3
HESM 210	Health Systems & Models	3
HESM 220	Services Planning and Evaluation of Health Services	3
HESM 230	Basic Accounting for the Health Industry	3
HESM 310	Economics of the Health Industry	3
HESM 320	Basic Finance for the Health Industry	3
HESM 330	Legal Aspects in the Health Industry	3
HESM 340	Budgeting for the Health Industry	3
HESM 410	Health Information Systems	3
HESM 420	Special Topics in Health Services	3
HESM 430	Practicum in the Health Services Management	3
HESM 431	Seminar in the Health Services Management	3
<b>Elective Courses 6</b>		

**BACHELOR'S DEGREE IN BUSINESS ADMINISTRATION WITH  
CONCENTRATION IN HUMAN RESOURCES MANAGEMENT**

This program develops professionals with the knowledge, skills, abilities and competencies required to perform technical, administrative, managerial and research functions in public and private organizations at the local and international sceneries. Emphasis is made on the development of competencies, aligned to the changing environments of the management of human resources, in training the students as analysts or specialists in the essential functions of management and administration of human resources in the organizations..

**Total Credits 120**

**General Education Courses 48**

**Core Courses 42 Major Courses 27**

**General Education Courses (48 credits)**

SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SPAN 255	Research and Writing	3
EXPL 101	Experiential Learning Workshops	
	Assessment	3
MATH 199	Quantitative Methods	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3
ENGL 231	Research And Writing	3
PSYC 123	Psychology	3
ECON 123	Economic Principles and Problems	
	(Compendium)	3
INSC 101	Integrated Sciences I	3
HIST 253	History of Puerto Rico (Compendium)	3
HUMA 111	Civilizations and Universal Culture I	3
HUMA 112	Civilizations and Universal Culture II	3
111	Individuals, Community, Government and Social Responsibility I	3
SOSC 112	Individuals, Community, Government and Social Responsibility II	3

**Core Courses (42 credits)**

ACCO 109	Basic Accounting for Non-accountants I	3
ACCO 110	Basic Accounting for Non-accountants II	3
FINA 202	Business Finance	3
STAT 201	Business Statistics I	3
STAT 202	Business Statistics II	3
ECON 140	Sustainable Economy	3
MKTG 203	Marketing and Strategic	

	Communications	3
MGMT 220	Organization and Business Behavior	3
MGMT 230	Human Resources Management and Handling Diversity	3
MGMT 240	Global Entrepreneurship	3
MGMT 250	International Business and E-Commerce	3
TECH 250	Information and Communication Technologies	3
MGMT 101	Managerial Principles and Leadership	3
BUSS 230	Legal and Ethical Issues in Business	3

**Major Courses (27 credits)**

HURM 201	Recruitment, Selection and Talent Management	3
HURM 210	Policy Making, Evaluation, and Reward System	3
HURM 215	Human Resources Information System	3
HURM 240	Employment and Labor Law	3
HURM 250	Training, Development and Career Management	3
HURM 304	Human Resources Evaluation and Performance Measurement	3
HURM 320	Negotiation and Conflict Management	3
HURM 330	Safety and Health Management in Workplace	3
ODHR 409	Consulting Management Principles of In Human Resources	3
MGMT 431	Integral Seminar	3

## COURSE DESCRIPTIONS

(Courses marked with @ could be offered in both modalities, traditional or on-line.)

### **BUSS 230**

#### **Legal and Ethical Issues in Business**

##### **Three Credits**

This course is aimed to study legal aspects of international commercial transactions; including those relating to the export, import; and transportation of finished / semifinished products and other related manufacturing components. It will emphasize the importance of the laws applicable to the business in reference to where they are developed. The relationship between the United States of America Federal Laws, International Laws and State Laws will be discussed. The importance of Ethics, Morals and Values when doing business and any commercial trade will be discussed.

### **EXPL 101**

#### **Experiential Learning Workshops Assessment**

##### **Three Credits**

Designed to help students assess their personal and professional experiences of learning. Integrates theorists of adult education and learning styles, accelerated learning, personal and professional planning and essential principles. Introduces tools to develop critical thinking, research and development of effective oral and written communication. Students will develop a portfolio that integrates their knowledge for personal and professional experiences.

### **ECON 140**

#### **Sustainable Economy**

##### **Three Credits**

Introduction to the basic fundamentals of economics for the decision-making process related to sustainability, including: environment, management of natural resources and social welfare. The student will use the basic tools of economics to identify resources and face solutions to environmental problems. Qualitative and quantitative approach including the "invisible hand", success and failure of markets with particular focus on public goods, costbenefit analysis, market valuation, incentive policies to control the environment, and renewable resources.

### **HESM 110**

#### **Health Services Management**

##### **Three Credits**

Introduction to the fundamental concepts of management of health services facilities. Application of the administrative

processes: organization, direction, control and evaluation. Emphasis is placed in public policies, health services management status, trends, organization, practices and issues relative to the delivery of health services in Puerto Rico and in the United States.

### **HESM 210**

#### **Health Systems & Models**

##### **Three Credits**

A study of the systems, models, health policies and the infrastructure of health services in Puerto Rico and in the United States. Emphasis is placed in health reforms and its implication in the delivery of health services to the general population. Includes a review of the historical development and the future of health services.

### **HESM 220**

#### **Services Planning and Evaluation of Health Services**

##### **Three Credits**

A study of the historical development of planning and evaluation of health services in Puerto Rico and in the United States with emphasis in its impact in organizations and in communities. Includes the theoretical foundations of planning strategies. Discusses and applies the techniques of evaluation to the health sector.

### **HESM 230**

#### **Basic Accounting for the Health Industry**

##### **Three Credits**

A study of the social, economic, and political developments that have influenced and determined the accounting practices in the health services industry. Reviews accounting procedures and discusses their applications in the health services industry. Actual and hypothetical health services accounting problems will be discussed.

### **HESM 310**

#### **Economics of the Health Industry**

##### **Three Credits**

A study of the modern micro and macro economy applied to health services in the public and private sectors. Emphasis is placed in the situations and issues of health economics. Discusses the relationship between the market forces of need and demand of health services.

### **HESM 320**

#### **Basic Finance for the Health Industry**

##### **Three Credits**

A study of the financial practices of health services organizations. Also, includes the fundamental methods and techniques for financial administration in the health services

industry, including fund distribution, capital management, determination and assignment of costs service rates. Case studies and applications are provided.

### **HESM 330**

#### **Legal Aspects in the Health Industry**

##### **Three Credits**

A study of the existing legislation in health services in Puerto Rico and in the United States. Emphasis is placed in the norms that have a bearing in the health services industry. Application experiences through case studies in aspects such as: malpractice, patient rights, informed consent, doctor-patient relationship, accidents, collective bargaining and ethical and legal issues.

### **HESM 340**

#### **Budgeting for the Health Industry**

##### **Three Credits**

A study of budget models, including the corresponding programmatic plans, and budget distribution. Emphasis is placed in goals, objectives and measurable results. The course provides for the application of budget models and techniques to health services settings.

### **HESM 410**

#### **Health Information Systems**

##### **Three Credits**

General introduction to the theory of information systems. The course provides for the application and use of software packages specifically designed for the health services industry for use in microcomputers and in mainframes, and for data collection, services utilization, billing, census, and others

### **HESM 420**

#### **Special Topics in Health Services**

##### **Three Credits**

Analysis and discussion of current issues and trends in the health services industry. Emphasis is placed in critical reading and analysis of case studies.

### **HESM 430**

#### **Practicum in the Health Services Management**

##### **Three Credits**

Application and integration to the workplace of the competencies and the concepts of health services management. The student will have the opportunity to apply the knowledge and skills acquired to a real health services setting under the supervision and guidance of a faculty member and a preceptor. The seminar session will place special attention to topics, issues and aspects relative to health services administration at the elementary and

intermediate levels. A research project on a related topic is required.

### **HESM 431**

#### **Seminar in the Health Services Management**

##### **Three Credits**

In this course the students apply the principles of personnel supervision and learn how to manage the problems associated with it in a department of a Health Care institution. It also emphasis in many issues of legal protection to the patient and to the institution that provide the health care services. In this course the student will practice in many departments of the health care institution. The practicum will be supervised by an institutional faculty member together with a certified health care administrator.

The seminar sessions will place special attention to topics, issues and aspects related to health services administration. A research project on a related topic is required.

### **HURM 201**

#### **Recruitment, Selection and Talent Management**

##### **Three Credits**

The course covers the theories, research and legal aspects that shape the practices and trends of recruitment, selection and retention of personnel in modern organizations from a strategic perspective. Emphasis on applied learning, students will develop and apply processes and methods of recruitment and selection to meet the needs of the organization and the challenges of a diverse workforce.

### **HURM 210**

#### **Policy Making, Evaluation, and Reward System**

##### **Three Credits**

Study of different compensation systems to attract, motivate and retain employees. Include the analysis of theories of motivation and reward, legal aspects of remuneration, classification and compensation systems, benefits and incentives, non-monetary rewards, wage structures, competency-based pay and performance evaluation. After completing the course, students will apply knowledge through case studies, research and practical exercises.

### **HURM 215**

#### **Human Resources Information System**

##### **Three Credits**

Discussion of management and functional foundations of information systems programs for managing human resources in the organization. Analysis of the main characteristics related to applications and programs, research and evaluation needs of information systems in the human resources function. Applications and comparison of major programs, such as PeopleSoft, SAP or BAAN. The

course includes the fundamental characteristics related to databases, information systems and strategic management process for the success of the organization.

#### **HURM 240**

##### **Employment and Labor Law**

###### **Three Credits**

Study of labor law from the perspective of federal and local laws in the employer-employee relationship, emphasizing the historical development and future trends in the labor market. Includes the discussion and analysis of economic, political and social impact in the workforce and work organization, the evolution of labor laws, contracts and human resources policies, human rights and antidiscriminatory laws. At the end of the course, the student will apply the knowledge acquired in the case evaluation and analysis, research and practical exercises which entails compliance with laws, rules and procedures in the management of human resources in private companies, both local and national.

#### **HURM 250**

##### **Training, Development and Career Management**

###### **Three Credits**

Study and analysis of the theoretical, conceptual and practical framework of the training and career development of human resources, and its main role in organizational strategic management. Emphasis on the needs analysis, design, development, implementation and evaluation of training programs that facilitate continuous learning in human resources and that lead to the achievement of organizational goals. Throughout the course, students will apply the processes, techniques and methods for accountability and financial return on investment (ROI) in training and development programs.

#### **HURM 304**

##### **Human Resources Evaluation and Performance Measurement**

###### **Three Credits**

The course emphasizes the role of human resources management strategic planning, performance evaluation and development of human resources. Discussion on the theories, strategies and techniques in the evaluation and performance measurement, interpretation of results and the identification of trends in the development of the organization. Through practical exercises, students will develop plans and effective tools to evaluate, analyze and report results, in quantitative terms, on the activities of human resources that contribute to the operation and success of the company.

#### **HURM 320**

##### **Negotiation and Conflict Management**

###### **Three Credits**

Principles, theories and basic practices for the effective management of negotiation, management and conflicts resolution in the business organization. Development of skills, techniques, methods and basic processes of negotiation, communication, persuasion and emotional intelligence, and the intervention of a third party to manage and resolve conflicts. At the end of the course, the student will recognize and value the role of the negotiator as a key element in resolving conflicts. Emphasis on the development of skills and conflict analysis skills, ways of tackling problems, types of negotiation, emotional intelligence, and communication strategies.

#### **HURM 330**

##### **Safety and Health Management in Workplace**

###### **Three Credits**

Introduction to the concepts and fundamentals laws of employees' safety and health at the workplace. It includes the study and analysis of the factors, risks and dangers of accidents and work-related diseases. Developing policies and practices for implementing effective security programs and occupational health. Evaluation and analysis of training programs for the development of preventive maintenance behaviors associated with occupational safety and health. Through case studies, students will apply the knowledge, skills, legal and managerial aspects to recognize evaluate and control the risks of safety and health of workers in the company.

#### **MGMT 101**

##### **Managerial Principles and Leadership**

###### **Three Credits**

This course focuses on modern management principles and major theories and models of leadership. The student will distinguish between the concepts of management and leadership, and will expose business terminology, concepts and current business topics. The course emphasizes the development and orientation towards leadership as well as understand critical related issues. Includes the role and responsibilities of managers and leaders, decision-making at different leadership scenarios, leadership in quality and planning in strategic management.

#### **MGMT 220**

##### **Organization and Business Behavior**

###### **Three Credits**

Study of concepts, theories and practices related to individual and group behavior and their impact on the effectiveness and efficiency of the organization as a system. Analysis and evaluation of mission and vision, organizational structure and design, information and communication technology, policies and practices, power and decision-making, innovation, strategic change and learning, leadership, teamwork and diversity in the company with global focus. Upon completion of the course, the student will apply the integrated model of organizational behavior, through analysis and case assessment, scientific research and current events from a professional and ethical perspective.

### **MGMT 230**

#### **Human Resources Management and Handling Diversity**

##### **Three Credits**

Study of models and strategies of management and human resource development from the perspective of diversity in the workplace. Analysis and evaluation of basic fundamentals in strategic planning of human resources to promote and ensure the inclusion of a diverse workforce in all aspects of organizational life. Implementation of theories and strategies of human resources linked to recruitment, selection, training and development, compensation, benefits and incentives, retention and succession of a diverse workforce, aligned to the objectives and business results, changes in the labor market, globalization and competitive advantage.

### **MGMT 240**

#### **Global Entrepreneurship**

##### **Three Credits**

This course uses prior and new knowledge to understand how entrepreneurs generate new and innovative ideas, products and processes at global level. The student will create and value, through innovation, national and international markets. It will explore different approaches of entrepreneurial organizations considering the skills and attributes needed to succeed in today's global competitive environment.

### **MGMT 250**

#### **International Business and E-Commerce**

##### **Three Credits**

This course is a comprehensive introduction to international business and management of electronic commerce. Arrangement of international management and technical aspects of electronic commerce will be discussed. The student will analyze the fundamental aspects of international legal regulations, infrastructure for business

transactions, the concept of e-readiness and models of e-commerce as a strategy of corporate expansion.

### **MGMT 431**

#### **Integral Seminar**

##### **Three Credits**

Comprehensive, theoretical, conceptual and decision analysis approach from the perspective of strategic change. This course allows application of knowledge, skills and abilities acquired in previous courses in order to improve the effectiveness and efficiency of the company. Emphasis is placed on research as an essential element in a strategic context, linked to changes occurring in the economy, technology, labor, business and trends in the discipline of study. The course is based on the analysis of case studies and research from international companies.

### **MKTG 203**

#### **Marketing and Strategic Communications**

##### **Three Credits**

This course presents strategies for integrating marketing and communications of the new century for innovative products and services to impact and attract new customers through social network, the Internet and local press. Fundamentals of brand marketing and strategic process come together in new advertising designs, responsible for maintaining the image and reputation of organizations in local and international markets. The processes of interaction with digital communications, media relations, company Web sites and video marketing will be analyzed.

### **ODHR 409**

#### **Consulting Management Principles of In Human Resources**

##### **Three Credits**

In this course the student will integrate managerial concepts learned through his/her career education in the area of human resources. Throughout the course the student will develop a consulting strategy to improve the effectiveness of an organization. By integrating managerial concepts, the student will evaluate practices and processes that increase productivity, effectiveness and approach from leaders towards more productive companies in the fundamental areas of human resource management.

### **PUHE 101**

#### **Introductions to Public Health and Health Education**

##### **Three Credits**

Introduction to the different conceptions about health, as well as the basic principal education. Analysis of the relationships that exist among the 4 mayor factors that determine health. Deals with various epidemiologic

concepts about health and illness, the natural history of diseases, attention and prevention levels, specific protection measures and health promotion. Emphasis is placed on existing health education models for individual and community intervention.

### **PUHE 201**

#### **Introduction to Biostatistics**

##### **Three Credits**

Basic concepts and principles of statistics applied to life and health. Emphasis in the basic techniques used in scientific research, primarily in areas of health education and public health. Analysis of the major statistical concepts such as: the scientific method and the statistics method and others.

### **PUHE 203**

#### **Introductions to Epidemiology**

##### **Three Credits**

Studies the occurrence, distribution and causes of diseases in communities using the epidemiologic method. The epidemiologic, as well as, the scientific method are applied to the health-illness process and its causes, particularly transmissible, chronic, mental diseases and high-risk behaviors.

### **PUHE 210**

#### **Biological Aspects of Human Diseases**

##### **Three Credits**

Develops sound scientific attitudes, the concepts and the basic biological processes of diseases, such as: inflammation, immunological reactions, regeneration and growth control, fibrosis and necrosis using the scientific method as the tool. Pathogenesis is incorporated to the various perspectives of epidemiology and disease control as they relate to public health. Laboratory experiences promote the application of technology to the study of the principal human diseases and agents that cause them.

### **TECH 250**

#### **Information and Communication Technologies**

##### **Three Credits**

This course presents different information systems and open source technologies to facilitate, expedite and promote the communication process, production and organization effectiveness. The student will understand the relationship between business strategies, the use of information technologies and the advantages of sustainable competitiveness that can contribute to the organization, both in local and international markets.

The School of Public Safety (formerly known as the Institute of Public Safety, ISEP) offers academic programs designed to professionalize the personnel of public and private agencies dedicated to the safety and protection of the population. The academic programs are designed and offered from a multidisciplinary perspective, integrating various components of public safety, such as: police, corrections, emergency management, forensic sciences, among others.

## FACULTY

**Angel Guzmán** / Assistant Professor  
MBA, Universidad del Turabo

**Esther Colón Santana** / Assistant Professor  
MBA, Universidad Metropolitana

**Holvin Perez Perez** / Assistant Professor  
MPA, Universidad Interamericana de Puerto Rico

## MISSION

The School of Public Safety is a System-Wide Academic School at the Ana G. Mendez University System. Its mission is to broaden education opportunities in public safety with a comprehensive and uniform model that is useful to the personnel of the municipal, state, federal and private agencies as well as for the citizens of the communities it serves. ISEP promotes the professionalization of public safety personnel with the highest standards of excellence. Therefore, contributes to the social and economic development of Puerto Rico.

## VISION

The School of Public Safety will be recognized as the first choice in Puerto Rico and the Caribe for the ongoing academic and professional development of public safety personnel. The School of Public Safety will excel by the high quality and constant development of its academic areas, and for the expertise and experience of their specialized instructors. The School will count with modern, safe and versatile physical facilities where personnel will be able to hone their skills with specialized equipment.

## PROGRAMS OF STUDY

### ASSOCIATE DEGREE IN EMERGENCY MANAGEMENT AND DISASTER RECOVERY

The Associate Degree in Emergency Management and Disaster Recovery allows the student to develop proficiency in the immediate response to emergency situations and disasters. The degree offers courses aimed at the management and coordination of these situations as well as courses with practical exercises aimed at the development of rescue skills. Graduates can explore work alternatives in municipal and state emergency management agencies, as well as emergency brigades of private companies.

<b>Total Credits</b>	<b>54</b>
<b>General Education Courses</b>	<b>18</b>
<b>Core Courses</b>	<b>18</b>
<b>18 Major Courses</b>	<b>18</b>

### General Education Courses (18 credits)

FSSS 105	Freshman Seminar	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 231	Research and Writing	3
SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
SIGN 101	Visual-Gestural and Body Language	
	Communication Techniques	3
PJPS 108	Basic Ethical Values	3
PJPS 112	Civil Rights and Crisis Situations	3
PJPS 116	Intervention with Special Populations	3
PJPS 120	Mediation and Intervention	3
PJPS 124	Human and Community Relations	3

### Core Courses (18 credits)

EMDR 101	Introduction to Emergency Management
----------	--------------------------------------

	Mitigation & Preparedness	3
EMDR 102	Introduction to Incident Command System	3
EMDR 201	Emergency Management Planning	3
EMDR 203	Occupational Health and Safety Regulations	3
EMDR 206	Introduction Emergency Management	
	Response & Disasters Recovery	3
EMDR 240	Emergency Preparedness, Response and Planning for Hazardous Materials	3

**Major Courses (18 credits)**

PSAF 133	Public Safety Communication Technology	2
PSAF 210	Rescue on Strings, Basic Knowledge and Operations	2
PSAF 211	Rescue in Technical Strings	2
PSAF 212	Rescue in Confined Spaces	2
PSAF 213	Rescue in Trenches	2
PSAF 221	Aquatic Rescue	2
PJPS 224	Execution of Vehicle Operations	2
PSAF 222	Technical Rescue in Collapse Structures I	2
EMDR 245	Introduction to Terrorism, National Security and Weapons of Destruction	3
EMDR 250	Development of the Strategic Plan for Disaster Management	3
EMDR 260	Internship of Emergency Management	3

**ASSOCIATE DEGREE IN PUBLIC SAFETY**

Students are exposed to a dynamic curriculum that provides the knowledge required by a professional career in the field of security, through a solid academic preparation that strengthens human values.

<b>Total Credits</b>	<b>54</b>
<b>General Education Courses</b>	<b>15</b>
<b>Core Courses</b>	<b>27</b>
<b>Major Courses</b>	<b>12</b>

**General Education Courses (15 credits)**

SPAN 152	Fundamentals of Reading and Writing	3
SPAN 250	Writing Techniques	3
ENGL 152	Fundamentals of Reading and Writing	3
MATH 120	Introductory Algebra	3
FSSS 105	Freshman Seminar	3

**Core Courses (27 credits)**

PJPS 108	Basic Ethical Values	3
PJPS 120	Mediation and Intervention	3
PSAF 130	Public Administration, NIMS & ICS	
PSAF 101	Reasonable Use of Force	
PSAF 133	Public Safety Communication Technology	
PJPS 204	First Aid for Criminal Justice Officers	2
PSAF 120	Physical Training and Wellbeing	
PJPS 214	Crime Scene Investigation	2
PJPS 210	Integrated Seminar in Penal Law, Criminal Procedure and Evidence	3
PJPS 112	Civil Rights and Crisis Situations	3
PJPS 240	Use and Management of Firearms	2
PJPS 236	Use and Management of Less Lethal Weapons	2

**Major Courses (12 credits)**

PJPS 224	Execution of Vehicle Operations	2
PJPS 228	Police Patrol I	2
PJPS 229	Police Patrol II	2
PJPS 208	Physical Training and Nutrition for Criminal Justice Officers	2
PJPS 220	Transit Interventions	2
PJPS 238	Principles of Tactical Operations	2
PSAF 225	Transportation of Inmates	
PSAF 218	Correctional Management System	
PSAF 222	Technical Rescue in Collapse Structures I	
PSAF 226	Administration and Supervision of the Inmate	
PSAF 232	Development and Growth of the Inmate	
PSAF 234	Probation, Parole and Community Treatment	
PSAF 239	Introduction to Special Criminal Laws	
PSAF 219	Introduction to Criminal Intelligence	
PSAF 223	Introduction to Delinquency, Fraud and Cyber Crimes	
PSAF 227	Intelligence Techniques, Interview and Interrogation	
PSAF 237	Introduction to Criminalistics	
PSAF 242	Forensic Investigation Techniques	
PSAF 143	Introduction to Forensic Investigation	

**BACHELOR'S DEGREE IN PENAL JUSTICE WITH  
CONCENTRATION IN SECURITY PROTECTION**

This program seeks to develop competent professionals in the area of protection and security. In addition to meeting the needs of human resources in the areas of supervision of security personnel, criminal investigation, protection and security in the public and private sector, with practical and tactical skills.

<b>Total Credits</b>	<b>120</b>
<b>General Education Courses</b>	<b>30</b>
<b>Core Courses</b>	<b>29</b>
<b>Major Courses</b>	<b>58</b>
<b>Elective Courses</b>	<b>3</b>

PJPS 132	Information And Communication Technologies For Public Security Officers	3		
PJPS 204	First Aid for Criminal Justice Officers	3		
PJPS 216	Investigation of Traffic Accidents	3		
PJPS 210	Integrated Seminar In Penal Law, Criminal Procedure And Evidence	3		
PJPS 214	Crime Scene Investigation	3		
POSC 380	Constitutional Law	3		
PJPS 124	Human And Communitary Relations	3		
PJPS 112	Civil Rights and Crisis Situations	3	PJPS 208	Physical Training and Nutrition for Criminal Justice Officers
STAT 300	Elements of Statistics I	3		3
			PJPS 220	Transit Interventions
			PJPS 224	Execution of Vehicle Operations
			PJPS 228	Police Patrol I
			PJPS 229	Police Patrol II
			PJPS 236	Use and Management of Less Lethal Weapons
				3

<b>General Education Courses</b>	<b>(48 credits)</b>	PJPS 238	Principles of Tactical Operations	3
FSSS 105	Freshman Seminar			3
SPAN 152	Fundamentals of Reading and Writing			3
SPAN 250	Writing Techniques			3
ENGL 152	Fundamentals of Reading and Writing			3
ENGL 153	Advanced Communicative English			3
MATH 120	Introductory Algebra			3
BIOL 101	Introduction to Biological Sciences I			3
PJPS 108	Basic Ethical Values			3
PJPS 116	Intervention with Special Populations			3
PJPS 120	Mediation and Intervention			3
<b>Core Courses</b>	<b>(33 credits)</b>			
SOCI 216	Contemporary Social Problems			3
CRIM 435	Case Preparation and Testimony			3
<b>Major Courses</b>	<b>(58 credits)</b>			
		PJPS 240	Use and Management of Firearms	3
		CRIM 305	Criminal Justice System in Puerto Rico	3
		CRIM 320	Criminal Investigation Techniques	3
		CRIM 325	Juvenile Delinquency in Puerto Rico	3
		CRIM 327	Correctional Program: Administration	
			Principles	3
		PUAD 203	Public Personnel Administration	3
		PUAD 310	Personnel Training	3
		PUAD 400	Planning and Government	3
		PUAD 405	Tax Policies and Government Budgeting	3
		PUAD 358	Administrative Law	3
		PUAD 231	Administrative Supervision for Safety	3
		PJPS 300	Tactical Planning	3
		PJPS 310	Incidents Management System	3
		PJPS 400	Administration and Supervision of	
			Crime Scene	3
		PJPS 410	Criminal Intelligence	3
		<b>Elective Courses</b>		<b>(3 credits)</b>

## COURSE DESCRIPTIONS

(Courses marked with @ could be offered in both modalities, traditional or on-line.)

### **EMDR 101**

#### **Introduction to Emergency Management Mitigation & Preparedness**

##### **Three Credits**

Accidents and emergency situations have plagued man since the beginning of history and will undoubtedly occur during our conceivable future. Armed with knowledge and skills for managing such occurrences can lessen their impacts on society. This course presents the theories, principles, and approaches to emergency management. The philosophy of Comprehensive Emergency Management will be discussed with the four attendant steps of current FEMA's strategic model. Legal issues involving emergency management will be presented.

### **EMDR 102**

#### **Introduction to Incident Command System**

##### **Three Credits**

This course introduces the Incident Command System (ICS), and provides the foundation for higher level ICS training. The course content describes the history, features and principles, and organizational structure of the Incident Command System. It also explains the relationship between ICS and the National Incident Management System (NIMS). ICS orientation is intended for personnel assigned to an incident or event who have a minimum requirement for understanding ICS. This course will review the ICS organization, the basic terminology, and common responsibilities. It will provide enough information about the ICS to enable the student to work in a support role at an incident or event, or to support an incident from an offsite location.

### **EMDR 201**

#### **Emergency Management Planning**

##### **Three Credits**

This course introduces the basic policies, concepts, and procedures of planning and addresses the various federal and state assistance programs. Emphasis is placed on the coordination of damage assessment, preparing documentation, and recovery procedures. Students will be introduced to the emergency management planning process, planning standards, planning techniques, and the steps in the development of a basic emergency management plan, special events contingency planning, debris management plan, and its functional annexes. This course is designed for emergency

management personnel who are involved in developing an effective emergency planning system.

### **EMDR 203**

#### **Occupational Health and Safety Regulations**

##### **Three Credits**

This course offers the student with the rationale of providing an occupationally safe and healthy work environment for employees. These skills are needed to be able to work effectively in the area of human resources and employee development as well as industrial relations since law has provided workers with specific safety and health rights.

### **EMDR 206**

#### **Introduction Emergency Management Response & Disasters Recovery**

##### **Three Credits**

This course provides an overview of hazards theory, emergency management fundamentals and the science of natural and man made hazards. Both natural and technological hazards are studied with the perspective of response and recovery focus. Some of the topics include response and recovery to earthquakes, tsunamis, volcanoes, floods, wildfires, terrorism, and hurricanes. An analysis of past disasters will be presented along with their impacts on policy formation leading up to the current FEMA all-hazards approach. The role, duties, and importance of the Emergency Manager will be discussed throughout the semester.

### **EMDR 240**

#### **Emergency Preparedness, Response and Planning for Hazardous Materials**

##### **Three Credits**

This course utilizes a modular format where a emergency management department may analyze its current level of competency and choose course modules that will provide the skills needed by its hazardous materials team. Training includes offensive procedures for mitigation of hazardous materials spills, leaks, and exposures. Topics include chemistry, detection devices, advanced recognition and identification, pre-incident planning, incident management, scene evaluation and termination, terrorism, toxicology, medical surveillance, emergency care, PPE usage and limitations, and decontamination.

### **EMDR 245**

#### **Introduction to Terrorism, National Security and Weapons of Destruction**

##### **Three Credits**

This course provides an introduction to the issue of weapons development proliferation, an nonproliferation around the world. We will examine the basic technologies and motivations,

and impact of the development of nuclear, chemical, and biological weapons and ballistic missiles on the international security. Will discuss the various international strategies to counter weapons proliferation - treaties, multilateral conventions and informal arrangements. Examine the challenges of weapons proliferation - such as domestic safety, regional stability and security, and transnational terrorism. This will be done through national and regional case studies - where we will discuss actual and potential US and international strategies/response to each case.

#### **EMDR 250**

##### **Development of the Strategic Plan for Disaster Management Three Credits**

This course will provide a broad introduction to the critical challenges of disaster management and policy. The central purpose of this course is to examine strategies for reducing the hazards posed by disasters. It will focus on what can be learned from the history of disasters, and on how we can apply those lessons to manage future disasters. This course is designed to student from a research or policy perspective and for those who may be charged with responsibility for on-the-scene intervention. It will conclude by examining organizational and individual behavior in high-stress situations. Throughout the semester, particular attention will be paid to how disaster management efforts can increase the vulnerability of some populations or can promote widespread resilience.

#### **EMDR 260**

##### **Internship of Emergency Management Three Credits**

This course integrates the knowledge acquisition in the Associate Degree courses. It applies the management concepts, principles and practices conducting a project within the students's specialization area. Methodology on project management, schedule of activities and task control, formal presentations and group dynamics to deal with management problems is emphasized. It includes an emergency management situation in the context of problem diagnostic and analysis, development of alternative solutions, tools development, implementation of alternatives/tools, and the evaluation of implementation.

Requires 60 hours on a practice internship.

#### **PJPS 108**

##### **Basic Ethical Values Three Credits**

Study of the basic ethical values, and the importance of its application in labor scenario by security, protection and

correctional officers. Discussion of applicable legislation and jurisprudence.

#### **PJPS 112**

##### **Civil Rights and Crisis Situations Three Credits**

Study of the Constitutional laws of inmates because the commission of crime in Puerto Rico. Analysis of the practices and interventions with inmates in the correctional institutions. Analysis of the standards and their accomplishment in the institutions imposed by the case of Morales Feliciano and its effects in our jurisdiction. Interates daily discussion in class and state and federal jurisprudence. Students will use the Commonwealth of Puerto Rico and the United States of America Constitutions.

#### **PJPS 116**

##### **Intervention with Special Populations Three Credits**

Study of the theoretical and practical aspects of the intervention process by security, protection and correctional officers with special population as: juveniles, elderly, domestic violence victims, ethnical groups, drunkards and individuals with mental health disease.

#### **PJPS 120**

##### **Mediation and Intervention Three Credits**

Study and critical of the mediation process as an intervention method to manage conflicts. Study of theoretical foundations, stages strategies and effective techniques management general disputes by protection, security and correctional officers.

#### **PJPS 124**

##### **Human And Community Relations Three Credits**

Study of Human relations and with community to public security officers. The course is focused on the descriptions of the characteristics in the community oriented police system, their importance and applications in the actual society. Also it pretends the police engagement to work with communities, the preventive strategies development, more proactive than reactive to deal with the criminality.

#### **PJPS 132**

##### **Information And Communication Technologies For Public Security Officers Two Credits**

Course for the study of the evolution of human communication and application of technology of exchange

information. Lays the foundation in the methods of security and protection of communications between individuals. It describes the processes of verbal and written interaction in a laboratory for the application of technology to the processes that occur in class.

#### **PJPS 204**

##### **First Aid for Criminal Justice Officers**

###### **Two Credits**

Instruct students in the primary care in medical emergencies that are included in the duty of the police as first responders/rescuers. The students will learn to provide their services in scenarios that require specialized knowledge and abilities in: anatomy, physiology, the basic human body, vital signs, shock, fainting, burns, diabetes, child birth, epilepsy, and heart attacks. Through practical exercises, the management of the following emergencies will be taught: choking, bleeding, and basic cardiopulmonary resuscitation (CPR).

#### **PJPS 208**

##### **Physical Training and Nutrition for Criminal Justice Officers**

###### **Two Credits**

The students will practice different exercise routines that permits them to perform each task, skill or function as agents of law and order. The course will emphasize will be an holistic physical development including nutritional, rest and physical exercises aspects.

#### **PJPS 210**

##### **Integrated Seminar In Penal Law, Criminal Procedure And Evidence**

###### **Three Credits**

Study of the general principles of the Penal Code of Puerto Rico, Special Penal Laws, Criminal Procedures Rules Evidence Rules that controls the juridical order in Puerto Rico. The basic as to the legal rules applicable to the minor offenses, special procedures and exception to the rules previously established. Methodology is used as the main study the analysis of case law under judicial hermeutical techniques.

#### **PJPS 214**

##### **Crime Scene Investigation**

###### **Two Credits**

The study of the history and purpose of criminal investigations and the terminology of this specialty. Provide adequate instruction in the elements, concepts and fundamental techniques in criminal investigations, such as: profile of the delinquent or criminal, emphasizing criminology, crime scene management, development of confidants and informants, and

characteristics of an investigator. Practical exercises that apply the acquired knowledge will be presented.

#### **PJPS 216**

##### **Investigation of Traffic Accidents**

###### **Two Credits**

This course will discuss the duties, responsibilities, and regulations of drivers mandated by the Vehicle and Transit Law of Puerto Rico. Additionally, the student will learn how to apply and enforcement this law. Also, the student will understand the different determining factors and legal aspects of accidents in order to conduct traffic accident investigations.

#### **PJPS 220**

##### **Transit Interventions**

###### **Two Credits**

This course will discuss the Vehicle and Transit Law of Puerto Rico and its implementation and application as it relates to the duties and responsibilities of Public Order Agents/Officers while driving. The student will also learn internal protocol and operating procedures that should be followed to perform safe and effective interventions.

#### **PJPS 224**

##### **Execution of Vehicle Operations**

###### **Two Credits**

Study and practice of vehicle operation techniques in different environments and routes that protection and security officers should apply in various activities as: patrolling, tracing and intervention. The course will emphasize in motor skills development by practical drills.

#### **PJPS 226**

##### **Management and Supervision of Inmates**

###### **Two Credits**

Introductory course of inmate's supervision techniques for custody agents and correctional employees. Emphasis will be in the specific development of the communication methods that are necessary to work in the correctional institutions. The primary goals of the course are: the development of the ability to work potential dangerous environment, the implementation and follow up of direct orders, recognition of the offender's manipulation, observation methods, knowledge and corporal language implementation and how to solve daily work problem a population culturally different.

#### **PJPS 228**

##### **Police Patrol I**

###### **Two Credits**

This course discusses the beginning of the organization and structure of the agencies of law and order. It will also discuss

the various methods and techniques to be used by law and order personnel. It focuses on the application of ethical, moral and legal models in the daily work of a police officer. Students will learn about the policies and regulations related to use of force and will develop an appropriated mind set. Will also learn the use of mechanical restrictions.

**PJPS 229**  
**Police Patrol II**  
**Two Credits**

Continuation study of daily transit police patrol, the difficulty to save lives in our community, and watch and secure property. Analysis of difficulties when the officer on patrol tries to maintain law and order that regulate drivers and pedestrians different types of patrol will be further examined to establish a teaching and learning process in order to develop an effective, short term and long term, operational plan that minimizes crime in society. Includes practical exercises to reinforce the patrolling skills of the public security officers.

**PJPS 232**  
**Growth and Development of Inmates in Corrections**  
**Two Credits**

In the course will be discussed and analyzed the treatment of the inmates in the correctional system the rehabilitation strategies, the prevention models and service programs and the development related to philosophies and correctional practices. Students will focus critically in theoretical affairs, and policies related to treatment and rehabilitation programs for adults and juveniles.

**PJPS 236**  
**Use and Management of Less Lethal Weapons**  
**Two Credits**

Study and practice of techniques and tactics in the use and manage of less lethal weapons, including their structure, components, definition and effects. Students will learn the types of less lethal weapons and their differences with firearms. Also, students will learn the importance of the responsible use of these weapons and the safety equipment required.

**PJPS 238**  
**Principles of Tactical Operations**  
**Two Credits**

Study and practice techniques of intervention with noncompliant individuals. Students will learn team work, decision making and planning in tactical interventions as well as in high risk interventions, like armed suspects, suicide

attempts, fugitives, hostages' rescue, protests. The course includes practice in entering structures, clearing the areas as well as arrests techniques.

**PJPS 240**  
**Use and Management of Firearms**  
**Two Credits**

This course will capacitate the student to carry and manage weapon in an adequate and legal manner. Emphasis will be given to the state and federal legal regulations in the use of weapons.

**PJPS 300**  
**Tactical Planning**  
**Three Credits**

Study of the operational and strategic plan to determine the essential resources and efficiency of the security agency. The course deals with the discussion of the effective assignment of specific tasks in each of the operational units. Emphasize the study of the responsibility and ethical and legal duties of people in charge of traffic units.

**PJPS 310**  
**Incidents Management System**  
**Three Credits**

Discussion and analysis of the incidents management system, types of incidents and emergency situations. Study of the Unified Command System, the communications and operations levels, the strategical and operational planning for the mitigation of risks and hazards. Study of the response and recovery procedures. Study of the private sector, local government, municipality government and the federal agencies in the Incident Management System.

**PJPS 400**  
**Administration and Supervision of Crime Scene**  
**Three Credits**

Study and critical analysis of the crime scene. Study of the theoretical fundamentals, stages in the process of intervention of the scene. Effective administrative and supervisory strategies and techniques in handling of a crime scene by officers of law and order.

**PJPS 410**  
**Criminal Intelligence**  
**Three Credits**

Analysis and evaluation of search strategies, analysis and dissemination related to criminal activity. Study of the criminal intelligence activity to gather information gear to the execution of coordinated activities and the establishment of policies and plans to attend delinquency in all its forms. Criminal

Intelligence is discussed as advanced knowledge, through information processing and its dissemination for timely decision making in the formulation of strategic intelligences planning

### **PSAF 133**

#### **Public Safety Communication Technology**

##### **Three Credits**

The fundamental aspects of the operation of the police communication and public security systems will be discussed, obeying the regulations, laws and policies that have been promulgated for their implementation and applicability. In addition, the student will know and identify the different techniques when using communication systems properly.

### **PSAF 210**

#### **Rescue on Strings, Basic Knowledge and Operations**

##### **Three Credits**

Participants will learn basic bail-out techniques in industries and in the community. The ICS (Incident Command System) will be applied to this scenario and will be trained in anchorage, knots, mooring and patient hauling. This course is derived from NFPA 1006 (Standard for Rescue Technician Professional Qualifications).

### **PSAF 211**

#### **Rescue in Technical Strings**

##### **Three Credits**

Participants will learn advanced techniques in String Rescue at more pronounced angles in the industrial setting and community. When the participant completes this course, he / she meets the requirements to be certified as a Professional Rescue Technician in accordance with NFPA 1006, "Standard for Rescue Technician Professional Qualifications", Chapter 6.

### **PSAF 212**

#### **Rescue in Confined Spaces**

### **Three Credits**

This course is based on the standards of NFPA 1006 "Standard for Technical Rescue Personnel" Chapter 9 and OSHA "Permit-Required Confined Space for General Industry". Participants will acquire knowledge for incident response in confined spaces and qualify for NFPA 1006 Confined Space Professional Rescue Technician.

### **PSAF 213**

#### **Rescue in Trenches**

##### **Three Credits**

This course is based on NFPA 1006 Standard for Technical Rescue Personnel and OSHA. Participants will acquire knowledge for the response to incidents in constructions and excavations, focused on Rescue in Trincheras. Also included in this course is Incident Command System for Trench Rescue.

### **PSAF 221**

#### **Aquatic Rescue**

##### **Three Credits**

This course is designed to provide participants with the knowledge and technical skills to operate as responders in floods, streams, rivers, rapids and other bodies of water. This course complies with NFPA 1006 (National Fire Protection Association) chapters 11 "Surface Water Rescue" and "12 Swift Water Rescue".

### **PSAF 222**

#### **Technical Rescue in Collapse Structures I**

##### **Three Credits**

During this course participants will learn techniques and skills to perform rescues in scenes of structural collapse either by natural disaster or incidents of terrorism. This course, besides being created for the Associate Degree in Emergency Management, can be directed to Firefighters, Paramedics, Industries, Police, WMD Technicians and National Guard.

## **SCHOOL OF TECHNICAL STUDIES**

### **VISION**

The vision of the School of Technical Studies (STS) is to make the Universidad Ana G. Méndez-Recinto de Gurabo System (SUAGM) the first choice and the model for technology education. The STS will become an important component of support to strengthen the undergraduate enrollment at SUAGM and its institutions.

### **MISSION**

Promote the academic, professional and technical excellence of a diverse population through specialized and innovative technical-vocational programs that allow graduates to move in the working world in a fast and successful way contributing to the economic development of the country.

## OBJECTIVES

In order to accomplish our mission, the School must comply with the following objectives:

1. Provide technical education that will respond to the present and future demands of the employment markets.
2. Train and develop in the students the skills and knowledge related to their profession, in accordance with the demands of the human resources of the community we serve.
3. Provide support services that will facilitate student retention in the program and that will contribute to academic and professional success.
4. Develop in the students the necessary skills and attitudes needed in the use of learning resources, including recent developments in the area of educational technology.
5. Provide students with real life laboratory experiences, so that they will familiarize themselves with the nature of their future job.
6. Develop students' competence in small business management, so that they are prepared to create employment for themselves as well as for other persons.
7. Incorporate emergent technologies in technical studies programs, according to the available resources.
8. Offer technical programs at the off-campus centers that will respond to the necessities of the geographic zone and communities they serve.

### **Important note:**

The institution provides practicum sites for students of this program. Availability in each academic period will be subject to the space provided by practicum centers. Practicum center may be located in different geographic areas through PR.

## PROGRAMS OF STUDY

### ASSOCIATE DEGREE IN RESPIRATORY THERAPY

The Associate Degree in Respiratory Therapy prepares students to be skilled in assisting in the diagnosis, treatment, management, control, rehabilitation and preventive care of patients with cardiopulmonary problems.

<b>Total Credits</b>	<b>65</b>
<b>General Education Courses</b>	<b>19</b>
<b>Core Courses</b>	<b>7</b>
<b>Major Courses</b>	<b>39</b>

MATH 120	Introductory Algebra	3
SPAN 152	Fundamentals of Reading and Writing	3
ENGL 152	Fundamentals of Reading and Writing	3
FSET 100	Freshman Seminar	3
BIOL 103	Survey of Biological Sciences	3
BIOL 300	Microbiology	3
BIOL 300L	Microbiology Lab	1
PHSC 101	Introduction to Physics	3
CHEM 101	Applied Chemistry	3
CHEM 101L	Applied Chemistry Lab	1
RESP 100	Introduction to Respiratory Care	3
RESP 101	Cardiopulmonary Anatomy and Physiology	3
RESP 102	Principles of Respiratory Therapy	3
RESP 202	Cardiopulmonary Pathophysiology	3
RESP 203	Respiratory Therapy Pharmacology	3
RESP 204	Respiratory Management	3
RESP 205	Diagnostic Evaluation in Respiratory Care	3
RESP 206	Sample of Blood Gases and Function	2
RESP 207	Mechanical Ventilation	3
RESP 208	Neonatal and Pediatric Patient	3
	Management	3
RESP 209	Practicum	6
RESP 210	Knowledge Integration in Respiratory	3
	Therapy	3

### ASSOCIATE DEGREE IN PHARMACY TECHNICIAN

This program provides training in the area of registration, handling, and control of medicines. The curriculum includes practical training hours in pharmacies that help the student to be eligible to take the examination of the Pharmacy Examining Board of Puerto Rico.

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>12</b>
<b>Core Courses</b>	<b>7</b>
<b>Major Courses</b>	<b>48</b>

#### General Education Courses (12 credits)

FSET 100	Freshman Seminar	3
BIOL 103	Survey of Biological Sciences	3
SPAN 152	Fundamentals of Reading and Writing	3
ENGL 152	Fundamentals of Reading and Writing	3

#### Major Courses (48 credits)

PATH 103	Pharmaceutical Calculations I	3
PATH 104	Pharmaceutical Calculations II	3
PATH 117	Pharmacy Introduction	3
PATH 122	Pharmacognosy	3
PATH 206	Over the Counter Medicine	3
PATH 220	Dosage	3
PATH 224	Pharmacy Practice Laboratory	3
PATH 225	Internship I*	6
PATH 226	Internship II*	6
PATH 227	Pharmaceutical Chemistry	3
PATH 228	Communication and Customer Service	3
	Pharmacist	3
PATH 229	Pharmacotherapy I	3
PATH 230	Pharmacotherapy II	3
PATH 231	Pharmaceutical Legislation	3

### ASSOCIATE DEGREE IN CLINICAL THERAPEUTIC MASSAGE

This program prepares students to apply various techniques of manipulation, stretching and massage therapy pressure according to the different customer submit its physical and emotional disorders. Students will have knowledge in energy treatments, sports massage, and reflexology, lymphatic drainage massage to special populations, structural kinesiology, and different therapies that will make this one successful graduate. Students will be trained to use and handle equipment and products, and administer a massage parlor or SPA.

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>12</b>
<b>Core Courses</b>	<b>6</b>
<b>Major Courses</b>	<b>42</b>

#### General Education Courses (12 credits)

FSET 100	Freshman Seminar	3
SPAN 152	Fundamentals of Reading and Writing	3
ENGL 152	Fundamentals of Reading and Writing	3
ENGL 153	Advanced Communicative English	3

**Core Courses (6 credits)**

CTMA 110	Clinical Therapeutic Massage	3
CTMA 120	Human Anatomy and Physiology of Massage	3

**Major Courses (12 credits)**

CTMA 130	Reflexology	3
CTMA 125	Swedish Massage	3
CTMA 140	Clinical Pathology and Pharmacology	
	Massage	3
CTMA 135	Spa Techniques and Hydrotherapy	3
CTMA 145	Lymphatic Drainage	3
CTMA 200	Craniosacral Therapy	3
CTMA 201	Sports Massage	3
CTMA 202	Eastern Massage Techniques	3
CTMA 203	Clinical Massage Techniques	3
SBAA 200	Small Business Administration	3
CTMA 205	Massage Special Populations	3
CTMA 206	Structural Kinesiology and Technical Clinic	
	Evaluation	3
CTMA 207	Integration Seminar Massage Therapist	3
CTMA 208	Clinical Experience	3

**ASSOCIATE DEGREE IN OFFICE SYSTEMS WITH MEDICAL BILLING**

This academic program will enable students to acquire the knowledge and skills to work in an environment of automated medical office. It will specialize in the use of medical terminology, procedures and medical office management and processes to perform medical billing transactions efficiently.

<b>Total Credits</b>	<b>54</b>
<b>General Education Courses</b>	<b>12</b>
<b>Core Courses</b>	<b>6</b>
<b>Major Courses</b>	<b>36</b>

**General Education Courses (12 credits)**

FSET 100	Freshman Seminar	3
SPAN 152	Fundamentals of Reading and Writing	3 ENGL
152	Fundamentals of Reading and Writing	3
MATH 120	Intermediate Algebra	3

**Core Courses (6 credits)**

OSMB 101	Accounting for Medical Billing	3
COAT 107	Keyboarding and Basic Skills in The Computer	3

**Major Courses (12 credits)**

OSMB 100	Medical Terminology	3
OSMB 102	Billing	3
OSMB 103	Coding	3
OSMB 104	Billing Audit	3
OSMB 105	Legal and Administrative Procedures	3
OSMB 106	Electronic Billing	3
OSMB 107	Electronic Medical Record	3
OSMB 108	Integrated Applications	3
OSMB 109	Introduction to Database Management	3
OSMB 110	Introduction to Office System Technology	3
OSMB 111	Medical Transcription	3
OSMB 112	Supervised Practice	3

**ASSOCIATE DEGREE IN PRESCHOOL EDUCATION TEACHER ASSISTANT**

This program provides students with the skills and knowledge required for proper functioning at the preschool level. Educate the student in structured programs so that they acquire the knowledge and skills necessary to share the work of the teacher in property.

<b>Total Credits</b>	<b>60</b>
<b>General Education Courses</b>	<b>12</b>
<b>Core Courses</b>	<b>27</b>
<b>Major Courses</b>	<b>21</b>

**General Education Courses (12 credits)**

FSET 100	Freshman Seminar	3
SPAN 152	Fundamentals of Reading and Writing	3 ENGL
152	Fundamentals of Reading and Writing	3
MATH 120	Intermediate Algebra	3

**Core Courses (27 credits)**

PREA 102	Health, Hygiene and Nutrition	3
PREA 114	The Use of Computer in Education	3
PREA 119	Theory, Practices and Assesment of the	
	Game as a Strategy of Education	3
PREA 135	Introduction to Education	3
PREA 139	Education for Exceptional Children	3
PREA 171	Human Growth and Development	3
PREA 172	Educational Psycology	3
PREA 176	Management of Classroom	3
PREA 202	Preparation of Material Devices	3

**Major Courses (21 credits)**

PREA 107	Teaching Reading and Writing	3
PREA 122	Speech Development and Correction of	
	Language	3

PREA 123	Children's Literature	3
PREA 136	Curriculum and Teaching Methods	3
PREA 143	Practical Experiences at Preschool Level for Teachers Assistants	3
PREA 144	Administration of Educational Program for Infants, Toddlers and Preschool Children	3
PREA 166	Childcare in Preschool Education	3

## COURSE DESCRIPTIONS

### COAT 107

#### Keyboarding and Basic Skills in The Computer Three Credits

The course content includes an introduction to technology in personal computers, applications and ethics in the use of computers. Students get direct experience with operating systems of computers and solve problems through practice with immediate applications of Word, Excel and Power Point. This course requires additional 45 hours in an open laboratory.

### CTMA 110

#### Therapeutic Massage Clinic Three Credits

This is an introductory course that gives students knowledge about the history and origin of massage. Aspects studied: professional, ethical and legal and hygiene, cleanliness and safety in the massage room. In addition, it studies the types of clients, technical consultation, preparation of environment with the team and best used with its general effects and contraindications products.

### CTMA 120

#### Human Anatomy and Physiology of Massage Three Credits

This course trains students in the basics related to human anatomy and physiology, the organization of a chemical level body structure, cell, tissues, organs and regulatory systems and body rhythms. The structures and functions of the skeletal, nervous, muscular and endocrine systems are integrated.

### CTMA 130

#### Reflexology Three Credits

This course enables the student to provide manual stimulation in so-called points and reflexes (feet and hands)

areas to bring an action in organs, tissues and conditions to improve our conditions.

### CTMA 125

#### Swedish Massage Three Credits

This course trains students in the techniques and skills by making seven (7) manipulations: stretching, kneading, friction, percussion, vibration, rubs, rubbing, causing the customer the feeling of relaxation and strengthening muscles and joints.

### CTMA 135

#### SPA TECHNIQUES AND HYDROTHERAPY Three Credits

In this course SPA concepts, techniques and more frequent body treatments are known. It presents the therapeutic values of hydrotherapy and different modalities used in physical conditions. It includes indications, precautions and contraindications as well as the physiological effects of various forms of application.

### CTMA 140

#### Clinical Pathology and Pharmacology Massage Three Credits

This course prepares students with the knowledge of diseases, conditions or injuries suffered by the human body. The student will acquire the skills to identify possible interactions or adverse reactions produced by drugs.

### CTMA 145

#### LYMPHATIC DRAINAGE Three Credits

This course prepares students in basic knowledge of the lymphatic system, its functions and technical mastery in the lymphatic massage. Moreover, they will know about benefits and contraindications and impact on the health of the individual.

### CTMA 200

#### Craniosacral Therapy Three Credits

This course prepares the student to feel and touch the cranial rhythmic movements, using basic techniques for treating conditions most common as well as their benefits and contraindications.

### CTMA 201

#### Sports Massage Three Credits

This course provides students with the skills to offer sports therapy at both training and competition, serving as a means to help athletes to achieve an optimal level.

### **CTMA 202**

#### **Eastern Massage Techniques**

##### **Three Credits**

This course trains students in different stretching techniques on joints, acupressure skills, energy points and benefits and contraindications. Develops student skills in handling applied from the toes to the head.

### **CTMA 203**

#### **Clinical Massage Techniques**

##### **Three Credits**

This course trains students in various techniques to treat myofascial trigger points and small muscle contractions that will identify through palpation analysis of posture and active and passive movement of the patient.

### **CTMA 205**

#### **Massage Special Populations**

##### **Three Credits**

This course develops in students the methods and techniques to deliver the right massage for pregnant women, children, elderly and people with disability can be useful so helping to eliminate fatigue caused by waste products from your muscles.

### **CTMA 206**

#### **Structural Kinesiology and Technical Clinic Evaluation**

##### **Three Credits**

This course enables the student to deepen and take the theoretical basis to apply Kinesiology in dynamic and practical way. In turn, integrates most effective in achieving a rebalancing of the body in manual therapy based on clinical evaluation measures.

### **CTMA 207**

#### **Integration Seminar Massage Therapist**

##### **Three Credits**

In this course students will review all the theoretical and practical concepts needed to take the test and get Revalidation License Massage Therapist in Puerto Rico. It will focus on the different types of the massage, manipulative techniques, benefits, contraindications and protocols for performing the massage.

### **CTMA 208**

#### **Clinical Experience**

### **Three Credits**

This course provides students the opportunity to apply knowledge, skills and attitudes acquired through its development program Technician Massage Therapy Clinic. This seminar will take place in a real scenario and under the direct supervision of a licensed professor in Massage Therapist. The student will apply various therapies to the university community, faculty, students and administrators.

### **FSET 100**

#### **Freshman Seminar**

##### **Three Credits**

This course aims to strengthen the knowledge and basic skills at the personal, intellectual and technological necessary for effective performance in activities that lead to academic performance and adjustment to college life. Students will participate in mentoring activities aimed at the acquisition of skills and knowledge that will allow its development in the academic area. The importance of comprehensive development of man and its relationship to academic success. The student is guided through a series of activities on campus to expose the services offered by our institution and the School of Professional Technicians. It is intended that students develop greater security and confidence to manage and resolve academic and personal situations.

### **OSMB 100**

#### **Keyboard and Computer Basics**

##### **Three Credits**

Medical Terminology course is designed for students to know and learn the terms and procedures used in a medical facility. In addition, students will learn medical vocabulary and their meanings.

### **OSMB 101**

#### **Accounting for Medical Billing**

##### **Three Credits**

This course prepares the student to know the basics of accounting that allows its application by analyzing financial reports.

### **OSMB 102**

#### **Billing**

##### **Three Credits**

This course will develop in students the skills and abilities to process bills of health services.

### **OSMB 103**

#### **Coding**

##### **Three Credits**

The Coding course includes the study of the nomenclature of diseases and health conditions, as well as an introduction to ICD 10, development and presentation of the structures, organization and implementation of the same. It is also studying medical procedures CPT4 aligning each diagnosis and the procedure performed, while guidance in Puerto Rico medical plans will apply.

#### **OSMB 104**

##### **Billing Audit**

##### **Three Credits**

This course is designed for students to check invoices, identify the most common mistakes and determine the reason for its refusal. Measurement income received by receiving and losses incurred in the billing process.

#### **OSMB 105**

##### **Legal and Administrative Procedures**

##### **Three Credits**

This course studied the legal dispositions applicable to administrative processes to the health services and the claims.

#### **OSMB 106**

##### **Electronic Billing**

##### **Three Credits**

This course prepares students in the use and management of electronic billing program. The student will be able to work the full cycle of electronic invoicing.

#### **OSMB 107**

##### **Electronic Medical Record**

##### **Three Credits**

This course prepares students in the use and management of electronic records and the use of electronic billing program enabling it to work on full cycle of electronic health information.

#### **OSMB 108**

##### **Integrated Applications**

##### **Three Credits**

In this course Microsoft Office programs are integrated. These are: Word, Excel, PowerPoint, Access and Outlook. The student will apply the acquired knowledge previously in Microsoft Office courses. You use internet options and mail to integrate documents. It will create different documents in which apply critical thinking to solve problems.

#### **OSMB 109**

##### **Introduction to Database Management**

##### **Three Credits**

This course is designed to enable the students to develop the techniques and skills necessary for the analysis and design of the database.

#### **OSMB 110**

##### **Introduction to Office System Technology**

##### **Three Credits**

This course is designed to enable the student to develop skills for the use and management of technological tools holistically.

#### **OSMB 111**

##### **Medical Transcription**

##### **Three Credits**

This course is designed to enable students to develop the skill to transcribe medical information by using dictation machine transcription to produce medical reports.

#### **OSMB 112**

##### **Supervised Practice**

##### **Three Credits**

The course offers the student the opportunity to apply the knowledges already acquired in the academic program, in a real work environment. The student will assist 4 days in the week to the practice center and his or her performance will be evaluated by the assigned supervisor in the practice center. One day of the week, the student will meet with the practice coordinator to discuss the work done, performance and experiences and to identify any areas that needed reinforcement.

#### **PATH 103**

##### **Pharmaceutical Calculations I**

##### **Three Credits**

This course prepares students to recognize the basic concepts of a prescription or medical order. Emphasizes pharmaceutical medical systems calculations, conversions, ratio and proportion.

#### **PATH 104**

##### **Pharmaceutical Calculations II**

##### **Three Credits**

This course prepares students to solve mathematical problems for filling a prescription. Emphasizes analysis, decision making and implementation of the ratio and proportion methods, dilution, concentration and flow rate calculated.

#### **PATH 117**

##### **Pharmacy Introduction**

##### **Two Credits**

Study of the origin and evolution of pharmacy. It includes discussion of basic concepts and terminology of the occupation of pharmacy technician. Emphasis on prescription and important abbreviations used in the prescription and its meaning, as well as procedures for handling and shipping thereof. Includes presentation forms of medicine, common synonyms and other preparations.

**PATH 122**  
**Pharmacognosy**  
**Three Credits**

Study of drugs derived from natural products of plant, animal and mineral extraction and purification methods, chemical composition, therapeutic use and effects on the body. Includes drugs obtained by biosynthesis in pharmaceutical and medicinal plants from Puerto Rico.

**PATH 206**  
**Drugs over the Counter**  
**Three Credits**

Discuss drugs available without a medical prescription, over the counter medicines, which are used in the prevention or treatment of the most common conditions affecting humans. The use of equipment, devices and common accessories available for sale in community pharmacies that are used for testing or monitoring of some common medical conditions or treatments. Includes a section on homeopathy because of the boom that it has acquired in recent years.

**PATH 220**  
**Dosage**  
**Three Credits**

Provides the necessary tools to introduce students to the fundamental concepts of the pharmacy related to the administration of medications and dosage forms for adult, pediatric. Includes equivalents and calculation of parenteral and insulin dose. Study of different routes of administration, special design features and management with its use.

**PATH 224**  
**Pharmacy Practice Laboratory**  
**Three Credits**

Practical Study of Pharmacy Technician functions related to the supply of medicinal products. Development of skills in the use and handling of equipment and books required by law. Analysis of the recipe for release from the interpretation, product selection, extemporaneous preparations, labeling and packaging. Includes responsibilities Pharmacy Technician in the hospital environment with emphasis on the most common drugs used in the hospital, techniques and sterile preparations and

preventive measures to avoid errors in the process of preparation of a medicinal product.

**PATH 225**  
**Internship I**  
**Six Credits**

Integration of knowledge and skills acquired in a real scenario that facilitate the development and strengthening internal core competencies to serve as a Pharmacy Technician future. The internship takes place in a community pharmacy, chain or institutional or a combination of these and it will be supervised by a licensed pharmacist duly authorized by the Pharmacy Examining Board, as stipulated in the Law # 247 Pharmacy Act Puerto Rico. Total hours required during the period is 500 hours.

**PATH 226**  
**Internship II**  
**Six Credits**

Integration of knowledge and skills acquired in a real scenario that facilitate the development and strengthening internal core competencies to serve as a Pharmacy Technician future. The internship takes place in a community pharmacy, chain or institutional or a combination of these and it will be supervised by a licensed pharmacist duly authorized by the Pharmacy Examining Board, as stipulated in the Law # 247 Puerto Rico Pharmacy Act. Total hours required during the period is 500 hours to complete the 1,000 hours required by the Pharmacy Examining Board as established by law and thus complete the requirements to be eligible for revalidation of Pharmacy Technician.

**PATH 227**  
**Pharmaceutical Chemistry**  
**Three Credits**

Study of the basic concepts of composition, structure, properties and behavior of matter. Emphasis on pharmaceutical chemicals serving in the daily life of human beings.

**PATH 228**  
**Administration, Communication and Customer Service**  
**Three Credits**

It presents the basics of effective communication of verbal and written form, and the correct way to establish a cordial relationship between the Technician Pharmacy and the patient, as with coworkers. Familiarizes students with issues of self-esteem, personality, human relations, search employment and interview.

**PATH 229****Pharmacotherapy I****Three Credits**

Study of the various systems and organs of the human body from structurally and functionally. It presents fundamental concepts of structure and functioning of the human body, the conditions and treatment of the integumentary, musculoskeletal and nervous and respiratory system. Emphasis in the treatment of conditions that affect the various body systems and increased use of drugs belonging to different categories based on clinical application. Including contraindications, precautions, warnings, interactions, dosage and side effects of drugs.

**PATH 230****Pharmacotherapy II****Three Credits**

Study of the various systems and organs of the human body from structurally and functionally. It presents fundamental concepts of structure and functioning of the human body, the conditions and treatment of the endocrine, circulatory, respiratory, digestive, urinary and reproductive systems. Emphasis in the treatment of conditions that affect the various body systems and increased use of drugs belonging to different categories based on their clinical application. Including contraindications, precautions, warnings, interactions, dosage and side effects of drugs.

**PATH 231****Pharmaceutical Legislation****Three Credits**

Study of state and federal laws governing research, development, manufacturing, packaging, marketing, sale and distribution of drugs and devices medical. Emphasis on the laws governing the exercise of the profession of pharmacy as well as of Pharmacy Technicians. It includes procedures for the organization a pharmacy and physics; requirements, equipment, licenses and permits.

**PREA 102****Health, Hygiene and Nutrition****Three Credits**

Study of health and safety procedures in a preschool educational environment, guided by standards of performance of preschool programs at the state and federal level. Will health procedures: diaper change, brushing teeth, washing of hands; safety procedures such as: fire, earthquake drills and shooting.

**PREA 107****Teaching Reading and Writing****Three Credits**

Study and analysis of the theory and practice used in the teaching of reading and writing at the preschool level. Emphasis on the development of teaching techniques and strategies used to stimulate the development of the literacy in preschool children. Includes exposure of literacy strategies to promote a natural according to developmentally appropriate practices.

**PREA 114****The Use of Computer in Education****Three Credits**

The course of the computer in education is directed to aspects related to the evolution and impact of the computer in education and the theories that support the integration into the educational field. Constructive methodology will be used to refine the humanist-skills related to the development of thinking skills and solution of problems in the educational environment where children and educators become familiar with computer programs from a practical perspective.

**PREA 119****Theory, Practices and Assesment of the Game as a Strategy of Education****Three Credits**

Study, practice and evaluation of theories and uses of the game in the early childhood education. It will discuss issues such as the role of play in the development of the whole child, representation of reality, purpose, types of games, evaluation, standards, rules to follow, technical assessment and adaptation to a child with a disability.

**PREA 122****Speech Development and Correction of Language****Three Credits**

The course allows the future Wizard of preschool teacher know the language development in early childhood (0 to 5 years). Consideration will be given to the stages of language development, the needs of the children and the theories related to the development of language.

**PREA 123****Children's Literature****Three Credits**

This course offers the Future Teacher Assistant Preschool the theoretical and practical form of the most essential of children's literature in early childhood. The Wizard of Preschool Teacher must possess broad knowledge of literature and the methodology needed to awaken in the child the taste for literature. Will be considered works of art,

fiction, folklore, poetry, short stories, and games with an emphasis on creativity.

### **PREA 135**

#### **Introduction to Education**

##### **Three Credits**

This course is based on the constructiveness paradigm. It provides the future preschool teacher assistant with the conceptualization of goals and the evaluation of their strengths and weaknesses, in light of the competencies pertinent to their training as an education professional. During this experience, special attention will be given to the observation and analysis of the educational environment, as well as to the teaching and learning processes. The course involves 15 hours of clinical experiences in preschools. The student becomes an active thinking subject capable of building his own knowledge.

### **PREA 136**

#### **Curriculum and Teaching Methods**

##### **Three Credits**

This course examines all aspects of the integral development of the preschool child. Includes philosophy, theories, methods, curriculum models, strategies and techniques in the teaching-learning process.

### **PREA 139**

#### **Education for Exceptional Children**

##### **Three Credits**

Study nature and needs of infants and toddlers with disabilities. We discuss the criteria to determine the concepts and high risk factors with emphasis on the assessment and diagnosis, teaching, techniques and adaptation strategies and intervention with young children with developmental disabilities.

### **PREA 143**

#### **Practical Experiences at Preschool Level for**

##### **Teachers Assistants**

##### **Three Credits**

This course of clinical experience is aimed at Preschool Teacher Assistants. It is a clinical experience in which the student assistant preschool teacher puts into practice the knowledge, skills, competencies and attitudes acquired in the preparatory courses. The teacher-student taught the teaching-learning process to a group of children at the preschool level. Entails 20 hours and 25 hours for supervisory visits.

### **PREA 144**

#### **Administration of Educational Program for Infants,**

### **Todlers and Preschool Children**

##### **Three Credits**

Study and analysis of the knowledge and skills required in the planning, management and coordination of programs for infants, maternal and children little ones. We discuss topics such as: different types of programs, planning and evaluation of goals, selection and supervisions of human resources, use and maintenance of facilities and physical resources, the role of parents in the education of maternal infant or toddler, government agencies regulation programs and preschool facilities and regulations.

### **PREA 166**

#### **Childcare in Preschool Education**

##### **Three Credits**

This course will provide the student strategies to actively participate in physical, emotional and cognitive development of children in preschool age. Include aspects such as relationships with others (socialization), health, nutrition and safe environment in preschool programs.

### **PREA 171**

#### **Human Growth and Development**

##### **Three Credits**

Study of the scientific and psychological that describe the growth and development of the early childhood and its implications for the teacher and the school. We study the processes that occur in the human being from the moment of conception and at all stages of development.

### **PREA 172**

#### **Educational Psychology**

##### **Three Credits**

This course provides an overview of the concepts learning and intelligence and its relationship to human development. The theoretical framework related to learning, intelligence and different learning styles under review.

### **PREA 176**

#### **Management of Classroom**

##### **Three Credits**

In this course students will study the theories and models of classroom management. It will discuss the strategies for the control of groups and behavior modification.

### **PREA 202**

#### **Preparation of Material Devices**

##### **Three Credits**

Laboratory course that combines graphic processes and instructional design for educational purposes. The techniques use to integrate media in education are

discussed. Students will develop materials taking into account the principles of communication, proper design and effective and the use and evaluation of these materials.

**RESP 100**  
**Introduction to Respiratory Care**  
**Three Credits**

This course introduces students to the medical discipline of respiratory care. Specifically addresses the historical, quality, ethics, security, communication and professional organization of the discipline. It enters in to the topic of oxygen administration and the techniques used for this purpose. Briefly describes the topics included within the field of respiratory care.

**RESP 101**  
**Cardiopulmonary Anatomy and Physiology**  
**Three Credits**

Course leading to develop in students the knowledge of anatomy and physiology of the cardiopulmonary system and the different organs and functions of this system. After completing this course the student will be able to recognize and describe the organs that make up the cardiopulmonary system, and identify the physiological processes carried out by the organs of the cardiopulmonary system.

**RESP 102**  
**Principles of Respiratory Therapy**  
**Three Credits**

Develop primary knowledge of respiratory therapy and its history. Development and application of basic skills for adequate assessment of patients. Know the proper handling of humidity therapy, aerosol and oxygen in routine situations and / or emergencies.

**RESP 202**  
**Cardiopulmonary Pathophysiology**  
**Three Credits**

Recognition, diagnosis and management of cardiorespiratory conditions. Development of different techniques: diagnosis, recognition skills and therapeutic applications in the different conditions presented. Assess the patient according to diagnostic measures studied.

**RESP 203**  
**Respiratory Therapy Pharmacology**  
**Three Credits**

Course designed to train students in basic principles of pharmacology based on the treatment and management of cardio-respiratory conditions. Knowledge of proper use and indicated bronchia dilatator drugs, anti-inflammatories,

antibiotics, prophylactic drugs, analgesics and antiarrhythmic drugs.

**RESP 204**  
**Respiratory Management**  
**Three Credits**

This course is designed to train students in therapeutic treatments hyperinflation therapy, chest physiotherapy and airway management of natural and artificial. Procedures of extubating patients. Understand and apply the techniques of hyperinflation therapy. Know and apply the techniques of chest physical therapy. Understand and apply management techniques natural and artificial airways.

**RESP 205**  
**Diagnostic Evaluation in Respiratory Care**  
**Three Credits**

This course provides relevant information related to the knowledge and skills that are necessary for the respiratory therapist is competent in the diagnostic evaluation of the patient. Included in some detail the basic principles of history and physical exam skills including obtaining vital signs, and the rationale and interpretation of diagnostic tests for blood gases, chest X-rays and other images, flexible bronchoscopy, monitoring cardiac output, the nutritional assessments, breathing patterns and documentation of the diagnostic evaluation.

**RESP 206**  
**Sample of Blood Gases and Function**  
**Two Credits**

This course is designed in the evaluation, implementation, management and interpretation of arterial blood gas sample and simple pulmonary function tests. Evaluate and make pulmonary function tests. Perform various tests to measure lung function. Suggest additional pulmonary function tests and / or specialized for specific cases. Take, analyze and interpret blood tests for blood gases. Suggest oxygenation changes respiratory treatment based on blood gas results.

**RESP 207**  
**Mechanical Ventilation**  
**Three Credits**

Course designed to train students in basic and advanced principles of mechanical ventilation. Identifying the issues concerning the initiation, monitoring and weaning of adult patients on mechanical ventilation and noninvasive.

**RESP 208**  
**Neonatal and Pediatric Patient Management**  
**Three Credits**

This course is designed for students to study the evaluation and implementation of pediatric and neonatal respiratory care, emphasizing the management of cardio-respiratory conditions. In addition to situations that lead to patient mechanic ventilation. Evaluate basic and advanced pediatric and neonatal patients. Recognizing the diagnosis and treatment of cardiopulmonary conditions more common in pediatric and neonatal. Start, change parameters and/or weaning pediatric and neonatal patients off mechanical ventilation.

### **RESP 209**

#### **Practicum**

#### **Four Credits**

This course is designed for the student evaluates and intervenes with adult, pediatric and neonatal hospital in a real clinical setting. It can apply the knowledge gained in therapeutic and diagnostic procedures, including airway management, CPR, oxygen, aerosol therapy. Development of clinical and practical knowledge of the student, including general adult care, pediatric and neonatal. Integrate the principles of cognitive, affective and psychomotor skills in patient care situations. Adequate use and proper application of basic equipment and advanced respiratory patterns. The clinical portion of the course will consist of 15 hours per week for the duration of these 15 weeks making a total of 225 hours.

### **RESP 210**

#### **Knowledge Integration in Respiratory Therapy**

#### **Three Credits**

This course is a review of all concepts and practices studied in the Respiratory Care Program with the intention of providing the necessary integration with a view to taking the examinations for licensing and accreditation.

### **SBAA 200**

#### **Administración de Pequeños Negocios**

#### **Three Credits**

This course trains students in basic principles for establishing, managing and developing a small business in Puerto Rico as well as develop skills and business skills emphasizing the requirements of law, permits and government support.

*Appendix*  
**Satisfactory Academic Progress Tables**

<b>Associate's Degree Programs</b>		
Credits Attempted	% of Credits Earned	GPA
1 – 28	57%	1.70
29 – 56	62%	1.85
57 +	67%	2.00

<i>Bachelor's Degree Programs</i>		
Credits Attempted	% of Credits Earned	GPA
1 – 30	55%	1.70
31 – 60	60%	1.85
61 – 90	64%	2.00
91 +	67%	2.00

<i>Teacher Preparation and Social Work</i>		
<i>Bachelor's Degree Program</i>		
Credits Attempted	% of Credits Earned	GPA
1 – 30	55%	2.00
31 – 60	60%	2.25
61 – 90	64%	2.50

91 +	67%	2.50
------	-----	------

<i>Post-Baccalaureate Certificate in Medical Technology Program</i>		
Credits Attempted	% of Credits Earned	GPA
1 – 15	55%	2.15
16 – 30	60%	2.25
31 – 45	64%	2.40
46 +	67%	2.50





**ADDENDUM TO THE UNDERGRADUATE CATALOG - 2019-2020  
(EXTENDED UNTIL JULY 30, 2021)**

## Contents

Veteran services .....	1
Transcripts .....	1
Student records .....	1
Study Abroad and Exchanges .....	1
Associate Degree in Dental Assistant with Expanded Functions.....	2
Associate Degree in Refrigeration and Air Conditioning Technology with Energy Management.....	6
Bachelor in Nutrition Sciences.....	10
Bachelor of Business Administration with concentration in Organizational Development.....	15
Bachelor of Science in Sign Language Interpretation.....	23
Bachelor in Education Level Fourth to Sixth.....	30

Addendum to the catalog include the following information:

### **Veteran services**

The student is responsible for notifying any change that occurs in their enrollment to the Certifying Officer and the Department of Veterans and inform any changes such as; change of institution, academic goal or program. The student should use the corresponding forms of each chapter. A student who used the Veteran's benefits at another institution must present the credits' transcript of origin, no later than two semesters upon enrollment.

The benefit for eligible Veterans students for GI Bill (Chapters 31, 33, 30, 1606 and 35) is requested online by accessing <https://www.va.gov/>. The beneficiary must comply with the requirements of the U. S. Department of Veterans Affairs before applying.

The Certifying Officer is located at the Registrar's Office (787) 743-7979 ext. 3566 who is responsible for handling all procedures related to Veteran beneficiaries.

### **Transcripts**

Official transcripts, which bear the seal of the Institution, will not be given to students or alumni, but sent directly to institutions specified by the students in their official requests to the Registrar's Office. In those cases, where a student is in debt with the Institution, the Registrar will not certify the courses approved until the student has paid the debt.

Any claim concerning a transcript request must be presented at the Registrar's Office no later than 90 days after making the request.

### **Student records**

The Registrar's Office is responsible for the administration, management and safeguarding of all academic student records and academic transactions. These includes the following responsibilities:

- Courses enrollment and withdrawal
- Issues grade reports,
- Unofficial and official transcripts,
- Degree certifications and
- Diplomas

Candidates for admission, readmission, or transfer and special students may not register until each has received an acceptance letter from the Office of Admissions.

### **Study Abroad and Exchanges**

Students taking courses abroad or out-of-state must do so under a collaborative agreement for student exchange between UAGM-Gurabo Campus and a partner institution, and/or under the guidance and approval of the corresponding academic department. The approval or transfer of credits from foreign or out-of-state institutions, must follow the institutional academic norms related to credit transfer, special permits, and academic progress.

Addendum to catalog to include the following programs:

**Associate Degree in Dental Assistant with Expanded Functions**

This program prepares the student to perform under the supervision of the dentist in the areas of: dental instrumentation and materials, oral and preventive radiology, diagnosis, clinical support, asepsis, maintenance and sterilization of equipment, as well as in administrative functions.

**Curriculum (57 credits)**

Course	Title	Credits	Contact Hours	Lab Hours	Requisites
<b>General Courses</b>					
FSET 100	Seminario de Primer Año	3	45	0	
ENGL 152	Fundamentals of Reading and Writing	3	45	0	
MATH 120	Algebra Introdutoria	3	45	0	
SPAN 152	Fundamentos de Lectura y Redacción	3	45	0	
	<b>Total</b>	<b>12</b>	<b>180</b>	<b>0</b>	
<b>Core Courses</b>					
COAT 107	Teclado y Aplicaciones Básicas en la Computadora	3	45	0	
MANA 230	Comportamiento Organizacional y Gestión	3	45	0	
ACCO 109	Contabilidad Básica para no contadores	3	45	0	
	<b>Total</b>	<b>9</b>	<b>135</b>	<b>0</b>	
<b>Concentration Courses</b>					
DASA 100	Anatomía y Fisiología de Cabeza y Cuello	3	45	0	
DASA 101	Instrumentos y Materiales Dentales	3	45	0	CO-REQ. DASA 101L
DASA 101L	Laboratorio Instrumentos y Materiales Dentales	1	0	30	CO-REQ. DASA 101
DASA 103	Ciencias Aplicadas a Salud Oral	3	45	0	
DASA 104	Radiología Dental	3	45	0	CO-REQ. DASA 104L
DASA 104L	Laboratorio Radiología Dental	1	0	30	CO-REQ. DASA 104
DASA 106	Preventiva	3	45	0	CO-REQ. DASA 106L
DASA 106L	Laboratorio Preventiva	1	0	30	CO-REQ. DASA 106
DASA 107	Funciones Especializadas I	3	45	0	DASA 104, DASA 104L CO-REQ. DASA 107L
DASA 107L	Laboratorio Funciones Especializadas I	1	0	30	DAST 104, DASA 104L CO-REQ. DASA 107
DASA 110	Práctica Clínica Dental	3	45	225	DASA 100, DASA 101, DASA 103, DASA 104, DASA 106, DASA 112, DASA 113
DASA 112	Funciones Administrativas Dentales	2	30	0	
DASA 113	Funciones Especializadas II	3	45	0	CO-REQ. DASA 113L
DASA 113L	Laboratorio Funciones Especializadas II	1	0	30	CO-REQ. DASA 113
DASA 114	Funciones Expandidas	3	45	0	
DASA 115	Repaso de Reválida Dental	2	30	0	DASA 104, DASA 106, DASA 113
	<b>Total</b>	<b>36</b>	<b>465</b>	<b>150</b>	

**FSET 100 - Freshman Seminar**

This course aims to strengthen the knowledge and basic skills at the personal, intellectual and technological necessary for effective performance in activities that lead to academic performance and adjustment to college life. Students will participate in mentoring activities aimed at the acquisition of skills and knowledge that will allow its development in the academic area. The importance of comprehensive development of man and its relationship to academic success. The student is guided through a series of activities on campus to expose the services offered by our institution and the School of Professional Technicians. It is intended that students develop greater security and confidence to manage and resolve academic and personal situations. Three Credits.

**ENGL 152 - Fundamentals of Reading and Writing**

This course develops and strengthens students' listening, speaking, reading, and writing proficiency in English. It includes grammar, vocabulary expansion, reading comprehension skills, writing mechanics, sentence writing, and descriptive, narrative, opinion, and cause/effect paragraphs. Three Credits.

**MATH 120 - Introductory Algebra**

This course studies elementary algebra topics such as: theory of sets, real numbers, algebraic expressions, equations, linear inequalities, exponents rules, operations with polynomials and factorization using common factor. Problem solving is of particular interest. Three Credits.

**SPAN 152 - Fundamentals of Reading and Writing**

This course develops paragraph writing skills, as well as the structure, the characteristics, and methods for the organization of ideas through the reading and analysis of texts. Basic elements of communication and the history of Spanish language are studied, in addition to the features of narrative and descriptive discourse. Three Credits.

**COAT 107 - Keyboarding and Basic Skills in the Computer**

This course enables the student to acquire an introduction to technology in personal computers, applications and ethics in the use of computers. This includes direct experiences with computer operating systems and problems, through immediate practice with Word, Excel and Power Point applications. Three Credits.

**MANA 230 - Organizational Behavior and Management**

Learn the basic principles of management: planning, organizing, directing and controlling incorporating the fundamental concepts of organizational behavior. Analyzes management processes by integrating the basic principles. Learn how individuals and groups impact the behavior within an organization. Includes classical and contemporary theories of organization; interpersonal and organizational behavior, motivation, communication, leadership theories and processes of decision-making. It includes both the theory and practical application of organizational behavior in business. It is a field of systematic study that focuses on improving productivity, quality and helping professionals to develop methods to empower people and to design and implement programs of change, elements of globalization and diversity. Provides guidance to managers in the creation and development of an ethical and healthy working environment. Three credits.

**ACCO 109 - Basic Accounting for Non-accountants**

Study of basic accounting concepts and principles with the purpose of understand their application through the analysis of financial reports. This considers the decisions making based on the knowledge of basic concepts within an ethical framework that includes: accounting nature, financial statements structure, accounting cycle, income

determination for a merchandising business, register control and valuation of accounts and notes receivables, cash and inventories. Three Credits.

#### **DASA 100 - Human and Dental Anatomy and Physiology**

This course provides an overview to students with the concepts of human anatomy and physiology with emphasis on dental anatomy, head and neck. The student will identify the oral cavity and learn how the teeth begin to develop from birth. This knowledge about teething apply daily in his career of Dental Assistant. Three Credits.

#### **DASA 101 - Dental Instruments and Materials**

The course prepares students with the knowledge to use and management of dental instruments as well as the types and properties possessed by the dental materials used in dentistry. Emphasizes the organization responsible for the standards and roles of the four-handed dentistry in contrast with specialized functions. Three Credits.

#### **DASA 101-L - Dental Laboratory Instruments and Materials**

In this lab the student can apply the skills and knowledge acquired to: identify, organize and handle each instrument and dental material needed in each of the different procedures as dental specialties. It will focus on maintenance, organization and use of equipment of the dental office. One Credit.

#### **DASA 103 - Dental Administrative Functions**

In this course the student will be prepared in the administrative processes that are carried out daily in a dental office. Two Credits.

#### **DASA 104 - Dental Radiology**

This course introduces students to the radiological principles for development of images needed for the diagnosis and treatment of dental conditions. Emphasizes the concepts of radiology and the intraoral and extra oral techniques. It includes the principles of safety measures for the protection of the operator and patient, several exposure techniques and types of operation of dental radiological machines as well as the legal requirements and appropriate use of the dental films according to the area of the oral cavity. Three credits.

#### **DASA 104-L - Dental Radiology Laboratory**

In this laboratory the student will apply the skills and knowledge for the development of dental radiography images necessary for the diagnosis and treatment of dental conditions. Apply the techniques of intraoral radiology and digital. One credit.

#### **DASA 107 - Specialized Functions I**

This course prepares the student to identify the specialties of periodontics, endodontics and oral and maxillofacial surgery procedures, techniques, indications, contraindications and diagnostic features associated with Dental Assistant. Three credits.

#### **DASA 107L - specialized functions laboratory I**

In this laboratory students apply the concepts learned about the role of his duties as a Dental Assistant in periodontics, endodontics and oral surgery and maxillofacial. One credit.

#### **DASA 110 - Dental Clinical Practice**

This course will enable the student to put into practice all the skills learned in a real work setting. Three credits.

**DASA 112 - Dental Administrative Functions**

In this course the student will be prepared in the administrative processes that are carried out daily in a dental office. Two credits.

**DASA 113 - Specialized Functions II**

This course prepares the student to identify the specialties of orthodontics, pediatric dentistry, prosthodontics and implantology, procedures, techniques, indications, contraindications, diagnostic functions associated with Dental Assistant. Three credits.

**DASA 113L - Specialized Functions Laboratory II**

In this laboratory students apply the concepts learned about the role of his duties as a Dental Assistant in the various branches of orthodontics, pediatric dentistry, prosthodontics and implantology. One credit.

**DASA 114 - Expanded Functions**

This course will develop in students the skills and knowledge to identify instruments and dental materials used in dental procedures. Three credits.

**DASA 115 - Dental Board Exam Review**

The course will allow students to review all the skills, solve problems and strengthen the areas that will be examined in the bar examination. Two Credits.

### **Associate Degree in Refrigeration and Air Conditioning Technology with Energy Management**

This program offers students the theoretical knowledge and practical skills needed to succeed in the changing world of technology. The two-year curriculum prepares the student in residential, commercial and Industrial refrigeration and air conditioning integrating the fundamental concepts of energy management. It also develops knowledge and skills in data analysis, problem solving and effective communication in English and Spanish. Graduates will have the opportunity to continue studies in the Bachelor of Science in Mechanical Engineering. Graduated student may take the exam offered by the Board of Examiners for technicians in refrigeration and air conditioning of the Government of Puerto Rico once completed its program of 1,035 hrs. and complied with all the requirements of law.

#### **Curriculum (57 credits)**

Course	Title	Credits	Requisites
<b>General Education Courses (18 crs)</b>			
MATH 120	Introduction to Algebra	3	Placement Exam
ENGL 152	Fundamentals of Reading and Writing	3	Placement Exam
SPAN 152	Fundamentals of Reading and Writing	3	Placement Exam
SOSC 111	Individual, Community, Social and Ethical Responsibility I	3	
ENGL 153	Advanced Communicative English	3	ENGL 152
SPAN 250	Writing Techniques	3	SPAN 152
<b>Professional/Core Courses (10 crs)</b>			
ETRA 160	Fundamentals of Electrical Circuits	3	Co-Req MATH 120
ETRA 160 L	Laboratory of Fundamentals of Electrical Circuits	1	Co-Req ETRA 160
FSEN 100	Freshman Seminar for Engineering Technology	3	
MATH 121	Intermediate Algebra	3	MATH 120
<b>Concentration Courses (29 crs)</b>			
RAEM 115	Fundamentals of Refrigeration and Air Conditioning	3	Co Req MATH 120
RAEM 115L	Laboratorio de Fundamentos de Refrigeración y Aire Acondicionado	1	Co Req. RAEM 115
RAEM 210	Principles of Residential Refrigeration and Air Conditioning	3	RAEM 115, RAEM 115L ETRA 160, ETRA 160L
RAEM 210 L	Laboratory of Principles of Residential Refrigeration and Air Conditioning	1	Co Req. RAEM 210
RAEM 220	Principles of Commercial and Industrial Refrigeration and Air Conditioning	3	RAEM 115, RAEM 115L ETRA 160, ETRA 160L
RAEM 220L	Laboratory of Principles of Commercial and Industrial Refrigeration and Air Conditioning	1	Co Req. RAEM 220
RAEM 240	Fundamentals of Automobile Air Conditioning	2	RAEM 115, RAEM 115L ETRA 160, ETRA 160L
RAEM 250	Professional Seminar	4	All courses with RAEM, ETRA MATH, and EMTE codes of previous semesters approved and Co-Req. with RAEM 240
ETRA 190	Fundamentals of Electrical System and Controls for Refrigeration and Air Conditioning	4	ETRA 160, ETRA 160L
ETRA 190L	Laboratory of Fundamentals of Electrical System and Controls for Refrigeration and Air Conditioning	1	Co Req. ETRA 190
EMTE 105	Fundamentals of Energy Management	3	
EMTE 110	Energy Management in Air Conditioning System	3	EMTE 105

**MATH 120 - Introductory Algebra**

This course studies elementary algebra topics such as: theory of sets, real numbers, algebraic expressions, equations, linear inequalities, exponents rules, operations with polynomials and factorization using common factor. Problem solving is of particular interest. Three Credits.

**ENGL 152 - Fundamentals of Reading and Writing**

This course develops and strengthens students' listening, speaking, reading, and writing proficiency in English. It includes grammar, vocabulary expansion, reading comprehension skills, writing mechanics, sentence writing, and descriptive, narrative, opinion, and cause/effect paragraphs. Three Credits.

**SPAN 152 - Fundamentals of Reading and Writing**

This course develops paragraph writing skills, as well as the structure, the characteristics, and methods for the organization of ideas through the reading and analysis of texts. Basic elements of communication and the history of Spanish language are studied, in addition to the features of narrative and descriptive discourse. Three Credits.

**SOSC 111 - Individual, Community, Government, Social and Ethical Responsibility I**

This course studies the historical development of social sciences and their relevance in contemporary society. It emphasizes the study of individuals as members of community: their social, biological, cultural and psychological dimensions, along with their ethical and social responsibilities. Three Credits.

**ENGL 153 - Advanced Communicative English**

This is a performance course designed to improve writing and oral communication skills in English. Students will learn how to choose a topic, gather information and ideas, create topic sentences, construct a thesis statement, and write three different types of essays. The course also provides writing models, guided structured activities, and integrated grammar lessons. Read Aloud (RA) techniques will be used in an active learning environment to promote students' listening, speaking, reading, and writing skills. Three Credits.

**SPAN 250 - Writing Techniques**

This course will develop oral and writing skills, which will enable composition at a university and professional level. Diverse strategies will be used for the reading and writing of expository, argumentative and professional texts. Three Credits.

**ETRA 160 - Fundamentals of Electrical Circuits**

The course introduces the basic concepts of electrical circuits and electric power. The student will have the opportunity to acquire the knowledge of electrical safety, Ohm's Law, Kirchhoff's Law, capacitive, resistive and inductive circuits, magnetism and electromagnetism. The three-phase system, transformers and power factor will be studied. In addition, the student will analyze the basic electrical circuits that are used in residential, commercial and industrial refrigeration and air conditioning equipments. Three Credits.

**ETRE 160L - Laboratory of Principles of Electrical Circuits and Power**

This laboratory course provides students with theoretical concepts and practical skills of electrical devices. It discusses the concepts of voltage, current, resistance. The issues are addressed to the operating principles, selection and specifications of different electrical devices such as: resistors, capacitors and inductors. Also, this course applies the principles of the power supply and transformer banks. One Credits.

**FSGE 100 - Freshmen Seminar**

Introduction to student development on issues related to college life, individual learning and academic progress. The course strengthens basic principles for social responsibility and ethical citizenship. The importance of the human being's integral development and its relationship with academic success will be emphasized. Three Credits

### **MATH 121 - Intermediate Algebra**

This course covers polynomials factorization, linear inequalities and problem solving; absolute-value equations and inequalities, operations and simplifications with: algebraic fractions, rational exponents and radicals. Also, linear equations graphics and linear equations systems are discussed. Three Credits.

### **RAEM 115 - Fundamentals of Refrigeration and Air Conditioning**

The course students will acquire the introductory concepts of refrigeration and air conditioning. They will study the history, the branches of this field and the thermodynamic principles that apply. The student will develop the theoretical knowledge in the following topics: characteristics of refrigerants, compressors, condensers, evaporators and metering devices. It will study, the loading and evacuation system and refrigerant leak detection. They will explain the use and care of oils and additives used in compressors and analyze the different mechanical and electrical problems of small refrigeration and air conditioning systems. In addition, the basics concepts of psychrometry will be studied. Three Credits.

### **RAEM 115-L - Laboratory of Fundamentals of Refrigeration and Air Conditioning**

The laboratory course will apply the theoretical knowledge acquired in the course RAEM 115, Fundamentals of Refrigeration and Air conditioning. The student will learn techniques for leak detection, evacuation, refrigerant charge and the recovery of refrigeration and air conditioning systems. The course includes flowcharts, thermodynamics appendices, conversion factors, coolant pressure and analysis of heating by pressure. Also, the student will apply the Thermodynamics Laws in this course. One Credit.

### **RAEM 210 - Principles of Residential Refrigeration and Air Conditioning**

In the course the student will learn the operation, installation and maintenance of residential refrigeration and air conditioning equipment's. They will acquire knowledge to work with control systems for refrigeration and air conditioning such as, relays, thermostats, defrost and heaters. They will learn the operation of hermetic compressors, condensers and evaporators used in refrigeration and air conditioning systems. In addition, its operation, installation and maintenance will be discussed. Also, the rules and regulations governing this technology will be learned. Three Credits

### **RAEM 220-L - Laboratory of Principles of Commercial and Industrial Refrigeration and Air Conditioning**

The laboratory course will apply the theoretical knowledge acquired in the course RAEM 220, Principles of Commercial and Industrial Refrigeration and Air Conditioning. The student will learn the practical techniques for leak detection, evacuation, refrigerant charging and recovery of cooling systems for commercial and industrial air conditioning. The course also includes flow charts, various annexes, conversion factors, refrigerant pressure and analysis of pressure reheating. The student will apply the laws of thermodynamics involve in these equipment's. One Credits.

### **RAEM 240 - Fundamentals of Automobile Air Conditioning**

In this course the student will acquire the basics concepts of automobiles air conditioning. They will study their functioning, parts, maintenance and breakdowns of these cooling systems. It applies the concepts of compressors, evaporators and condensers as well is work with the electrical system and controls for these equipments. In addition, students will learn the rules and regulations governing this technology. Two Credits.

### **RAEM 250 - Professional Seminar**

Study and analysis of knowledge's and skills of the previous courses with the RAEM, ETRA, MATH and EMTE codes. The students will discuss theoretical concepts, implementation, operation and maintenance of refrigeration and air conditioning systems. Problems found in cooling systems of residential, commercial, industrial and automobile will be analyzed. The student will have the knowledge and the skills necessary to take the exam offered by the Board of Examiners for technicians in refrigeration and air conditioning of the Government of Puerto Rico. This course will also provide the students with the necessary knowledge to develop their own business. Four Credits.

#### **ETRA 190 - Fundamentals of Electrical System and Controls for Refrigeration and Air Conditioning**

In the course students learn the basics concepts of electrical and control circuits used in refrigeration and air conditioning systems. students will have the opportunity to learn skills that apply to contactors, thermostats, relays and pressure switches. They will analyze the electrical system related to residential, commercial and industrial cooling thermal systems. In addition, they will study the different electric motors that apply to these systems. Four Credits.

#### **ETRA 190-L - Laboratory of Fundamentals of Electrical System and Controls for Refrigeration and Air Conditioning**

The course provides students with the theoretical and practical skills in analysis and troubleshooting for electrical and control circuits in refrigeration and air conditioning. It applies the concepts of electric motors and components. The themes are directed to the principles of operation, installation and specifications of different electrical devices such as thermostats, relays, pressure switches and other. One Credits.

#### **EMTE 105 - Fundamentals of Energy Management**

In this introductory course students will acquire the basic concepts of energy management. The energy audit process, consumer bills analysis and economic analysis in this field will be studied. Explanations on how electrical and mechanical systems directly affect consumption and energy management will also take place. And in the final stages of the course, students will learn how the control systems and other technologies can improve consumer spending. Three Credits.

#### **EMTE 110 - Energy Management in Air Conditioning System**

In the course the student acquires knowledge and laboratory skills in the area of direct digital control systems for ventilation, heating and air conditioning. The main topics in the energy management of buildings will be discussed and analyzed. Simple zone control systems, constant air volume systems and variable air volume systems will be applied. Techniques will be used in the handling of faults and the programmable controllers for air conditioning systems will be configured. Three Credits.

### Bachelor in Nutrition Sciences

The curriculum consists of 123 credits with a focus on the utilization of food for human growth and metabolism, in both normal and dysfunctional states. Includes instruction in food science, biochemistry, and food and nutrition studies. The program is designed for students who expect to pursue advanced degrees in nutritional sciences or professional degrees in medicine, dentistry, or public health.

#### Curriculum (123 credits)

Course	Title	Credits	Requisites
<b>General Education Courses - 36 credits</b>			
BIOL 103	Survey of Biological Sciences	3	
ENGL 152	Fundamental of Reading and Writing	3	
FSHS 105	Freshman Seminar in Health Sciences	3	
HUMA 111	Civilizations and Universal Culture I	3	
SPAN 152	Fundamentals of Reading and Writing	3	
ENGL 153	Advanced Communicative English	3	ENGL 152
MATH 120	Elementary Algebra	3	
SOSC 111	Individual, Community, Government and Social Responsibility I	3	
SPAN 250	Writing Techniques	3	SPAN 152
ENGL 231	Research and Writing	3	ENGL 153
PSYC 123	Survey Course in Psychology	3	SOSC 111
HIST 253	History of Puerto Rico (Compendium)	3	HUMA 111
<b>Core Courses – 25 credits</b>			
CHEM 224	Fundamentals of General Chemistry	3	BIOL 103, coreq. CHEM 224L
CHEM 224L	Fundamentals of General Chemistry Laboratory	1	BIOL 103, coreq. CHEM 224
BIOL 303	Human Biology I	3	BIOL 103, coreq. BIOL 303L
BIOL 303L	Human Biology I Laboratory	1	BIOL 103, coreq. BIOL 303
CHEM 225	Fundamentals of Organic Chemistry	3	CHEM 224, CHEM 224L, coreq. CHEM 225 L
CHEM 225L	Fundamentals of Organic Chemistry Laboratory	1	CHEM 224, CHEM 224L, Coreq. CHEM 225
HESC 360	Statistics Applied to Health Sciences	3	MATH 120
BIOL 301	Food Microbiology	3	CHEM 225, CHEM 225L
BIOL 304	Human Biology II	3	BIOL 303, BIOL 303L, coreq. BIOL 304L
BIOL 304L	Human Biology II Laboratory	1	BIOL 303, BIOL 303L, coreq. BIOL 304
BIOL 350	Biochemistry	3	CHEM 225, CHEM 225L
<b>Concentration Course – 59 credits</b>			
NUTR 201	Introduction to Nutrition	4	BIOL 103, BIOL 303, CHEM 224, CHEM 225
NUTR 310	Foodservice System Management	4	NUTR 201

Course	Title	Credits	Requisites
NUTR 420	Nutritional Assessment	3	NUTR 201, BIOL 304, BIOL 304 L
NUTR 202	Food Science	3	NUTR 201, BIOL 301, Co- req. NUTR 202L
NUTR 202L	Food Science Laboratory	1	NUTR 201, BIOL 301, Co- req. NUTR 202
MSNT 540	Nutritional Problems; a global perspective	3	
NUTR 403	Advanced Nutrition & Metabolism	3	NUTR 420, BIOL 350
NUTR 405	Nutrition throughout the Life Cycle	3	NUTR 420
NUTR 425	Community Nutrition	3	NUTR 420
NUTR 205	Nutrition in Sports and Exercise	2	NUTR 420
NUTR 305	Sociocultural Aspects in Nutrition	2	NUTR 425
NUTR 320	Foodservice Facility Design and Equipment	3	NUTR 310
NUTR 440	Medical Nutrition Therapy I	4	NUTR 403, NUTR 405
NUTR 460	Purchasing and Preparation of Quantity Foodservice	3	NUTR 202, NUTR 202 L, NUTR 310
NUTR 203	Nutrigenomics-Nutrigenetics	2	
NUTR 321	Institutional Menu Planning	3	NUTR 320, NUTR 460, Co- req. NUTR 321L
NUTR 321L	Institutional Menu Planning Laboratory	1	NUTR 320, NUTR 460, Co-req. NUTR 321
NUTR 435	Educational Strategies in Nutrition	3	NUTR 425
NUTR 441	Medical Nutrition Therapy II	4	NUTR 440
NUTR 451	Nutritional Research Methods	2	NUTR 420, HESC 360
NUTR 438	Weight Management	3	
<b>Elective Course - 3credits</b>			
NUTR 204	Vegetarian Nutrition	3	

Minimum GPA of 2.0 in all concentration courses / Minimum graduation GPA of 2.0

### **BIOL 103 - Biology for Health Science Students**

Science course that prepares the student to acquire the fundamental concepts of the Biology Science such as: matter characteristics, the cell, introduction to Physiology, Human Anatomy and introduction to genetics. Said course is offered to the Health Science students. Three Credits.

### **ENGL 152 - Fundamentals of Reading and Writing**

This course develops and strengthens students' listening, speaking, reading, and writing proficiency in English. It includes grammar, vocabulary expansion, reading comprehension skills, writing mechanics, sentence writing, and descriptive, narrative, opinion, and cause/effect paragraphs. Three Credits.

### **FSHS 105 - Freshmen Seminar in Health Sciences**

The focus of this course is to strengthen basic knowledge and skills at a personal, intellectual and technological level necessary to succeed in the activities of academic performance and adjustment to university life. Each student will participate in mentorship activities that will continually build upon skills and knowledge base in the advancement of student development. Important emphasis is given to the integral development of humanistic fulfillment and academic success. The student is guided through a series of activities on the university campus

exposing them to the services offered by the institution, and the School of Health Sciences. The goal will translate into the student feeling secure and confident in managing and solving personal and academic situations. Three Credits.

#### **HUMA 111 - Civilizations and Universal Culture I**

This course studies the development of the human being with emphasis on culture, arts, philosophy, religions and ideas. It encourages the individual to understand the differences between countries and societies from their origins until the Middle Ages. Three Credits.

#### **SPAN 152 - Fundamentals of Reading and Writing**

This course develops paragraph writing skills, as well as the structure, the characteristics, and methods for the organization of ideas through the reading and analysis of texts. Basic elements of communication and the history of Spanish language are studied, in addition to the features of narrative and descriptive discourse. Three Credits.

#### **CHEM 224 - Fundamentals of General Chemistry**

Study of the principles of General Chemistry designed for students of health related professions. The course includes topics about measurement systems, matter and energy, chemical reactions, atomic and molecular structure, chemical bonds, radioactivity, stoichiometry, solutions, liquid and gas states, chemical equilibrium, chemical kinetics, acids and bases. Three Credits.

#### **CHEM 224L - Fundamentals of General Chemistry Laboratory**

The knowledge of this course contribute to that the student interprets and verifies the main definitions, laws and theories of the general chemistry (matter, properties of matter, elements and compounds, chemical reactions, solutions, acids and bases, and radiations) and in its practical application. Also, to dominate the main experimental techniques and the work with the measuring instruments and to develop experimental skills that allow him to acquire new knowledge. One Credits.

#### **ENGL 153 - Advanced Communicative English**

This is a performance course designed to improve writing and oral communication skills in English. Students will learn how to choose a topic, gather information and ideas, create topic sentences, construct a thesis statement, and write three different types of essays. The course also provides writing models, guided structured activities, and integrated grammar lessons. Read Aloud (RA) techniques will be used in an active learning environment to promote students' listening, speaking, reading, and writing skills. Three Credits.

#### **MATH 120 - Introductory Algebra**

This course studies elementary algebra topics such as: theory of sets, real numbers, algebraic expressions, equations, linear inequalities, exponents rules, operations with polynomials and factorization using common factor. Problem solving is of particular interest. Three Credits.

#### **SOSC 111 - Individual, Community, Government, Social and Ethical Responsibility I**

This course studies the historical development of social sciences and their relevance in contemporary society. It emphasizes the study of individuals as members of community: their social, biological, cultural and psychological dimensions, along with their ethical and social responsibilities. Three Credits.

#### **SPAN 250 - Writing Techniques**

This course will develop oral and writing skills, which will enable composition at a university and professional level. Diverse strategies will be used for the reading and writing of expositive, argumentative and professional texts. Three Credits.

**BIOL 303 - Human Biology I**

The course integrates the study of the structure of the human organism, its development and histology, with the function of organs and systems. Also, issues related to health are discussed. Study of cellular concepts, histological structures, and of osteoarticular, muscle and nerve systems; emphasizing the value of life, human dignity, respect, integrity, justice and responsibility of every human being. Three Credits.

**BIOL 303-L - Human Biology Laboratory I**

The laboratory experiments were design to enable students to learn human anatomy and physiology in a whole manner. Each laboratory experience and other activities were chosen to encourage students to think for themselves, take initiative and be responsible in their work. Focus in the ethics principles involved in the study of human biology. One Credits.

**CHEM 225 - Fundamentals of Organic and Biological Chemistry**

Study of the principles of Organic and Biological Chemistry designed for students of health-related professions. The course Includes topics about structure and reactions of saturated organic compounds: alkanes, cycloalkanes and haloalkanes. Structure and reactions of unsaturated compounds: alkenes, alkynes and dienes. Stereochemistry. Structure and reactions of aromatic compounds. Structure and reactions of organic compounds containing oxygen, nitrogen and sulfur: alcohols, ethers, aldehydes and ketones, carboxylic acids, amines, amides, sulfur compounds and thiols. Structure and functions of lipids, amino acids, proteins, enzymes and nucleic acids. Metabolic pathways and energy production. Three Credits.

**CHEM 225L - Fundamentals of Organic and Biological Chemistry Laboratory**

This course provides the student a complement for a general overview of the basic concepts of organic molecules at structural level, general physical and chemical properties of organic molecules are observed and compared with properties of inorganic compounds. The chemical and physical properties of organic molecules possessing different functional groups are discussed at experimental level; these functional groups include alkanes, alkenes, alcohols, carbonyl compounds, and some bio-molecules containing these functional groups such as carbohydrates and lipids. The concept of chemical synthesis is introduced through the preparation of the common analgesic acetylsalicylic acid (aspirin), and the preparation of soap using several triacyl glycerides. One Credits.

**ENGL 231 - Research and Writing**

Research and Writing is a performance course designed to develop students' skills in academic research and writing. The focus is on the strategies and techniques needed in the process of producing original academic research-based papers. Students will learn how to choose a topic, create a research question and thesis statement, research information, organize ideas, and use technological and library resources. The principal emphasis will be on correct writing of formal English, clarity, organization, and logical development. In addition, all papers will exhibit proper use of current American Psychological Association (APA) norms. Students will receive practical instruction in the adequate use of computerized resources in the SUAGM libraries and in the application of APA norms of academic style and citation of bibliographical sources. Three Credits.

**HESC 360 - Statistic Applied to Health Sciences**

This core course is aimed to students of the School of Health Sciences to identify the basic concepts of statistic and understand their relevance in research studies, as well as their application in the health sciences field. The qualitative and quantitative analysis applied to clinical research, according to different research designs, will be emphasized. Three Credits

**BIOL 301 - Introduction to Food Microbiology**

Introductory microbiology course for students; interested in careers related to human health and the food industry. The course is aimed at students who do not possess a prior course of microbiology. The itinerary begins with the basics in Microbiology (diversity, classification, microbial growth). Be studied also issues aimed at understanding the interaction pathogen-host as: microorganisms with pathogenic potential, normal microflora, epidemiology, immunology and diseases. The course will be study issues related to the microorganisms of importance in the food (food spoilage, fermented foods and other products of microbial origin), regulations, practical problems and bioethics of the food industry. The course will analyze how microorganisms impact human health and the quality of the food using a practical approach with application to daily life and to the future profession of the student. Three Credits.

### **BIOL 304 - Human Biology II**

The course integrates the study of the structure of the human organism, its development and histology, with the function of organs and systems. Also, issues related to health are discussed. Emphasis in sensorial organs and endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary and reproduction system; emphasizing the value of life, human dignity, respect, integrity, justice and responsibility of every human being. Three Credits.

### **BIOL 304-L - Human Biology Laboratory II**

The laboratory experiments were design to enable students to learn human anatomy and physiology in a whole manner. Each laboratory experience and other activities were chosen to encourage students to think for themselves, take initiative and be responsible in their work. Focus in the ethics principles involved in the study of human biology. One Credits.

### **BIOL 350 – Biochemistry**

Systematic discussion of biological molecules, such as amino acids, proteins, nucleic acids, carbohydrates, and lipid structures. Characterization, physical properties, and method of isolation of these molecules are studied. The pathways for the degradation and biosynthesis of the major class of biological molecules will be discussed. The bioenergetics aspects of metabolism will be discussed first within the context of the whole catabolism and anabolism, individual pathways and enzymatic reactions. Three Credits.

### **NUTR 201 - Introductory Nutrition**

Introductory course about fundamentals of nutrition, such as the study of foods, nutrients, digestion, absorption, metabolism, and excretion. Problems associated with deficiency and excess are discussed. Students will have the opportunity to evaluate their food intake in terms of caloric content, nutrients and compare it with the established recommendations for individual needs. Three Credits

### **Bachelor of Business Administration with concentration in Organizational Development**

El programa de Bachillerato en Administración de Empresas con concentración en Desarrollo Organizacional prepara profesionales con las destrezas necesarias para promover el desarrollo de las organizaciones públicas y privadas desde la perspectiva del desarrollo del talento humano. Se enfatiza en el diseño organizacional integrando elementos internos y externos que influyen en la productividad y motivación del individuo y que pueden impactar el funcionamiento de la compañía.

#### **Curriculum (120 credits)**

<b>Código</b>	<b>Título</b>	<b>Créditos</b>	<b>Pre-Requisitos</b>
<b>General Education Courses</b>			
ECON 123	Principios y Problemas Económicos (Compendio)	3	SOSC 112
ENGL 152	Fundamentos de Lectura y Redacción	3	
ENGL 153	Inglés Comunicativo Avanzado	3	ENGL 152
ENGL 231	Investigación y Redacción	3	ENGL 153
PORF 101	Portafolio	3	
HIST 253	Compendio de Historia de Puerto Rico	3	
HUMA 111	Civilizaciones y Cultura Universal I	3	
HUMA 112	Civilizaciones y Cultura Universal II	3	HUMA 111
INSC 101	Ciencias Integradas I	3	
MATH 199	Métodos Cuantitativos I	3	
PSYC 123	Psicología General (Compendio)	3	
SOSC 111	Individuo, Comunidad, Gobierno y Responsabilidad Social I	3	
SOSC 112	Individuo, Comunidad, Gobierno y Responsabilidad Social II	3	SOSC 111
SPAN 152	Fundamentos de Lectura y Redacción	3	
SPAN 250	Técnicas de Redacción	3	SPAN 152
SPAN 255	Investigación y Redacción	3	SPAN 250
	<b>Total</b>	<b>48</b>	
<b>Professional Component</b>			
ACCO 109	Contabilidad Básica para No-contadores I	3	
ACCO 110	Contabilidad Básica para No-contadores II	3	ACCO 109
BUSS 230	Aspectos Legales y Ética en los Negocios	3	MGMT 101
ECON 140	Economía Sustentable	3	
FINA 202	Finanza Mercantil	3	ACCO 109
MGMT 101	Principios Gerenciales y Liderazgo	3	
MGMT 220	Organización y Conducta Empresarial	3	
MGMT 230	Gerencia de Recursos Humanos y Manejo de la Diversidad	3	MGMT 101
MGMT 240	Empresarismo Global	3	MGMT 101
MGMT 250	Negocios Internacionales y Comercio Electrónico	3	MGMT 101
MKGT 203	Mercadeo y Comunicación Estratégica	3	MGMT 101
STAT 201	Estadísticas Gerencial I	3	MATH 199
STAT 202	Estadísticas Gerencial II	3	STAT 201
TECH 250	Tecnología de Información y Comunicación	3	
	<b>Total</b>	<b>42</b>	
<b>Concentration Courses</b>			
ODHR 203	Comunicación Organizacional Estratégica	3	
ODHR 204	Psicología Organizacional	3	
ODHR 305	Diversidad en las Organizaciones	3	
ODHR 306	Resolución de Conflictos y Arbitraje	3	
ODHR 307	Adiestramiento y Desarrollo del Talento Humano	3	
ODHR 308	Liderando Cambios Organizacionales	3	

ODHR 409	Principios Gerenciales de Consultoría en Recursos Humanos	3	ODHR 204
ODHR 410	Coaching Organizacional	3	
ODHR 411	Calidad Total en Escenarios de Trabajo	3	
	<b>Total</b>	<b>27</b>	
<b>Integrative Component</b>			
MGMT 431	Seminario Integrador	3	Todos los cursos del componente concentración
	<b>Total</b>	<b>3</b>	

**ECON 123 - Economic Principles and Problems (Compendium)**

Micro-economics and macro-economics theories and practices: value and price, exchange, distribution, production, employment, resources assessment, social welfare, social empowerment and the influence of government in the economic development. Three Credits.

**ENGL 152 - Fundamentals of Reading and Writing**

This course develops and strengthens students’ listening, speaking, reading, and writing proficiency in English. It includes grammar, vocabulary expansion, reading comprehension skills, writing mechanics, sentence writing, and descriptive, narrative, opinion, and cause/effect paragraphs. Three Credits.

**ENGL 153 - Advanced Communicative English**

This is a performance course designed to improve writing and oral communication skills in English. Students will learn how to choose a topic, gather information and ideas, create topic sentences, construct a thesis statement, and write three different types of essays. The course also provides writing models, guided structured activities, and integrated grammar lessons. Read Aloud (RA) techniques will be used in an active learning environment to promote students’ listening, speaking, reading, and writing skills. Three Credits.

**ENGL 231 - Research and Writing**

Research and Writing is a performance course designed to develop students’ skills in academic research and writing. The focus is on the strategies and techniques needed in the process of producing original academic research-based papers. Students will learn how to choose a topic, create a research question and thesis statement, research information, organize ideas, and use technological and library resources. The principal emphasis will be on correct writing of formal English, clarity, organization, and logical development. In addition, all papers will exhibit proper use of current American Psychological Association (APA) norms. Students will receive practical instruction in the adequate use of computerized resources in the SUAGM libraries and in the application of APA norms of academic style and citation of bibliographical sources. Three Credits.

**PORF 101 – Portfolio**

Designed to help students assess their personal and professional experiences of learning. Integrates theorists of adult education and learning styles, accelerated learning, personal and professional planning and essential principles. Introduces tools to develop critical thinking, research and development of effective oral and written communication. Students will develop a portfolio that integrates their knowledge for personal and professional experiences. Three Credits.

**HIST 253 - History of Puerto Rico (Comp)**

This course is a compendium of the history of Puerto Rico from insular prehistoric time to the present. The course discusses the principal geographical aspects of Puerto Rico, Pre-Columbian cultures, and the conquest and colonial period of the island. A historical panoramic perspective of Puerto Rico's socio-economic, political, cultural, and religious issues will also be analyzed within an international context. Three Credits.

**HUMA 111 - Civilizations And Universal Culture I**

This course studies the development of the human being with emphasis on culture, arts, philosophy, religions and ideas. It encourages the individual to understand the differences between countries and societies from their origins until the Middle Ages. Three Credits.

**HUMA 112 - Civilizations and Universal Culture II**

Study of the development of the human being with emphasis on culture, arts, philosophy, religions and ideas, encouraging the individual to understand the differences between countries and societies from the Renaissance to the present. Three Credits.

**INSC 101 - Integrated Sciences (101)**

Science course in which the student apprehends and discovers the basic principles of physical and earth sciences. It prepares the student to make decisions and solve problems regarding the universe, their planet, their environment and surroundings. It provides the student the necessary skills to analyze published articles related to science discoveries. The development of scientific concepts is emphasized by the inquiry method through an interdisciplinary teaching and an integrated curriculum. Three Credits.

**MATH 199 - Quantitative Methods I**

Course for students of Business Administration School. Studies the following topics: Functions and their properties, linear and quadratic equations and its graph, linear inequalities, exponential and logarithmic functions, solution to systems of equations. Emphasis will be given to the applications. Three Credits.

**PSYC 123 - Survey Course in Psychology**

Condensed version of Psychology 121-122. Introduction to basic theories of human behavior and their relation to social progress and individual growth. Three Credits.

**SOSC 111 - Individual, Community, Government, Social and Ethical Responsibility I**

This course studies the historical development of social sciences and their relevance in contemporary society. It emphasizes the study of individuals as members of community: their social, biological, cultural and psychological dimensions, along with their ethical and social responsibilities. Three Credits.

**SOSC 112 - Individual, Community, Government, Social and Ethical Responsibility II**

This course studies the experience of individuals as members of a community: their civic, political, economic and environmental dimensions along with their ethical and social responsibilities will be addressed. Three Credits.

**SPAN 152 - Fundamentals of Reading and Writing**

This course develops paragraph writing skills, as well as the structure, the characteristics, and methods for the organization of ideas through the reading and analysis of texts. Basic elements of communication and the history of Spanish language are studied, in addition to the features of narrative and descriptive discourse. Three Credits.

**SPAN 250 - Writing Techniques**

This course will develop oral and writing skills, which will enable composition at a university and professional level. Diverse strategies will be used for the reading and writing of expository, argumentative and professional texts. Three Credits.

**SPAN 255 - Writing and Research**

This course aims to develop student's research and advanced academic writing skills. The process of critical inquiry (the selection of a topic, statement and resolution of a hypothesis, and the search, revision and use of data), as well as an emphasis on the writing process (pre-writing, organization of details, edition, correction, re-writing), will be covered throughout the course. Three Credits.

**ACCO 109 - Basic Accounting for Non-accountants**

Study of basic accounting concepts and principles with the purpose of understand their application through the analysis of financial reports. This considers the decisions making based on the knowledge of basic concepts within an ethical framework that includes: accounting nature, financial statements structure, accounting cycle, income determination for a merchandising business, register control and valuation of accounts and notes receivables, cash and inventories. Three Credits.

**ACCO 110 - Basic Accounting for Non-accountants**

Study of basic accounting concepts and principles with the purpose of understand their application through the analysis of financial reports. It focuses the decision-making based on knowledge of fundamental concepts within an ethical framework that includes: nature of the operating assets and their impact on financial reporting; recognition of current liabilities, contingencies and concept of interest; identification, characteristics, importance and effects of long-term debt. The course contains the shareholders' equity concept, components, characteristics and differences between various types of shares, dividends, classification and impact on cash and equity from shareholders and recognize the fundamentals differences between organizational structures such as corporation, partnership and sole proprietorship. Three Credits.

**BUSS 230 - Legal and Ethical Issues in Business**

This course is aimed to study legal aspects of international commercial transactions; including those relating to the export, import; and transportation of finished / semi-finished products and other related manufacturing components. It will emphasize the importance of the laws applicable to the business in reference to where they are developed. The relationship between the United States of America Federal Laws, International Laws and State Laws will be discussed. The importance of Ethics, Morals and Values when doing business and any commercial trade will be discussed. Three Credits.

**ECON 140 - Sustainable Economy**

Introduction to the basic fundamentals of economics for the decision-making process related to sustainability, including: environment, management of natural resources and social welfare. The student will use the basic tools of economics to identify resources and face solutions to environmental problems. Qualitative and quantitative approach including the "invisible hand", success and failure of markets with particular focus on public goods, cost-benefit analysis, market valuation, incentive policies to control the environment, and renewable resources. Three Credits.

**FINA 202 - Business Finance**

A study of fundamentals principles of business finance and its analysis, planning and control functions: effect of income tax, financial ratio analysis, forecasting, capital budgeting and cost of capital, and interest factor in financial decisions. Three Credits.

**MGMT 101 - Managerial Principles and Leadership**

This course focuses on modern management principles and major theories and models of leadership. The student will distinguish between the concepts of management and leadership, and will expose business terminology, concepts and current business topics. The course emphasizes the development and orientation towards leadership as well as understand critical related issues. Includes the role and responsibilities of managers and leaders, decision-making at different leadership scenarios, leadership in quality and planning in strategic management. Three Credits.

**MGMT 220 - Organization and Business Behavior**

Study of concepts, theories and practices related to individual and group behavior and their impact on the effectiveness and efficiency of the organization as a system. Analysis and evaluation of mission and vision, organizational structure and design, information and communication technology, policies and practices, power and decision-making, innovation, strategic change and learning, leadership, teamwork and diversity in the company with global focus. Upon completion of the course, the student will apply the integrated model of organizational behavior, through analysis and case assessment, scientific research and current events from a professional and ethical perspective. Three Credits.

**MGMT 230 - Human Resources Management and Handling Diversity**

Study of models and strategies of management and human resource development from the perspective of diversity in the workplace. Analysis and evaluation of basic fundamentals in strategic planning of human resources to promote and ensure the inclusion of a diverse workforce in all aspects of organizational life. Implementation of theories and strategies of human resources linked to recruitment, selection, training and development, compensation, benefits and incentives, retention and succession of a diverse workforce, aligned to the objectives and business results, changes in the labor market, globalization and competitive advantage. Three Credits.

**MGMT 240 - Global Entrepreneurship**

This course uses prior and new knowledge to understand how entrepreneurs generate new and innovative ideas, products and processes at global level. The student will create and value, through innovation, national and international markets. It will explore different approaches of entrepreneurial organizations considering the skills and attributes needed to succeed in today's global competitive environment. Three Credits.

**MGMT 250 - International Business and E-Commerce**

This course is a comprehensive introduction to international business and management of electronic commerce. Arrangement of international management and technical aspects of electronic commerce will be discussed. The student will analyze the fundamental aspects of international legal regulations, infrastructure for business transactions, the concept of e-readiness and models of e-commerce as a strategy of corporate expansion. Three Credits.

**MKTG 203 - Marketing and Strategic Communications**

This course presents strategies for integrating marketing and communications of the new century for innovative products and services to impact and attract new customers through social network, the Internet and local press. Fundamentals of brand marketing and strategic process come together in new advertising designs, responsible for maintaining the image and reputation of organizations in local and international markets. The processes of interaction with digital communications, media relations, company Web sites and video marketing will be analyzed. Three credits.

**STAT 201 - Web Applications Development**

Major course that provides the tools and methodologies to design and develop dynamic web applications and connections to remote database servers. Three Credits.

**STAT 202 - Statistics for management II**

Study of statistics concepts of estimation, hypothesis test, statistical inference and technical random sampling. In addition, define the sample size, analysis of variance ANOVA and lineal correlation. The integration of the methodology of case solution and analysis is the most important side of the course. The use of the appropriate technology and software, to make significant statistical analysis, outstanding and practical on the decision making in their professional campus. Techniques like Latin Square and Graeco – Latin Square are treated. Factorial Analysis is introduced. Three Credits.

**TECH 250 - Information and Communication Technologies**

This course presents different information systems and open source technologies to facilitate, expedite and promote the communication process, production and organization effectiveness. The student will understand the relationship between business strategies, the use of information technologies and the advantages of sustainable competitiveness that can contribute to the organization, both in local and international markets. Three Credits.

**ODHR 203 - Strategic Organizational Communication**

Introduction to the foundation of strategic organizational communication. This course provides students with an overview of the necessary skills of strategic communication inside organizations. Theories and concepts of strategic communication are discussed and how it integrates other managerial skills such as planning, interpersonal relations, negotiation, and conflict resolution, among others. It emphasizes the application of concepts to real situations for problem solving. Three Credits.

**ODHR 204 - Organizational Psychology**

This course studies theories and psychological principles inside organizations. It focuses in relating basic concepts with the opportunity to increase productivity in the work setting understanding organizational and human behavior, and improving individual performance. Topics include: teams in organizations, motivation, differences, attitudes and work relevant emotions, stress, leadership and organizational change and development. Students will apply psychological theories to problems and/or work settings. Three Credits.

**ODHR 305 - Diversity in Organizations**

This course presents a variety of theories and perspectives that arise from differences in race, culture, religion, gender, age and other characteristics related to diversity in a job environment. Students will understand how these dimensions affect performance, motivation, productivity and success of organizations. How to face and to

change practices such as: stereotypes, prejudices, perceptions and other beliefs that present barriers to reach the competitiveness of individuals and organizations will be discussed. The course emphasizes the interconnection of social and cultural processes to avoid possible factors that might generate discriminatory practices. Three Credits.

#### **ODHR 306 - Conflict Resolution and Arbitrage**

This course provides students the necessary knowledge for conflict management at all organizational levels. It emphasizes in the development of negotiation skills, arbitration and managing objections in order to develop alternatives that satisfy the interests of all parts. The design of strategies necessary for a successful negotiation process will be studied. Three Credits.

#### **ODHR 307 - Training and Human Resource Development**

Needs analysis, design, implementation and evaluation of training and human capital development in work organizations. The course emphasizes the recognition of human talent as a competitive advantage in high performance organizations. Creating a climate of positive and healthy workplace through professional training programs and human capital development, allowing motivate, encourage and provide skills necessary to optimize their performance. Includes topics such as leadership development, motivation and retention, needs analysis, design and management of training. Three Credits.

#### **ODHR 308 - Leading Organizational Change**

Discussion of the principles and models of organizational changes and the development of skills to lead these changes. Emphasizes on managing effectiveness of organizational change elements and forces that act against these changes. Emphasizes intervention designs and recommendations for strategic changes from a human perspective. Includes topics of effective communication, design of strategic plans, process evaluation, phases of changes implementation and diagnosis. Three Credits.

#### **ODHR 409 - Consulting Management Principles of In Human Resources**

In this course the student will integrate managerial concepts learned through his/her career education in the area of human resources. Throughout the course the student will develop a consulting strategy to improve the effectiveness of an organization. By integrating managerial concepts, the student will evaluate practices and processes that increase productivity, effectiveness and approach from leaders towards more productive companies in the fundamental areas of human resource management. Three Credits.

#### **ODHR 410 - Organizational Coaching**

This course provides to the student fundamental knowledge of coaching practices for managerial improvement. Emphasizes the integral approach of human relations in organizations and techniques for the development of organizational coaches. Concepts as leadership, instructing, training and motivating teamwork to achieve goals are discussed. The concepts of empowerment and constant feedback to teams are studied. Three Credits.

#### **ODHR 411 - Total Quality in Work Scenarios**

Discussion of the principles and techniques in Total Quality Management (TQM) with emphasis on its application in organizations. This course provides the student the necessary knowledge which enables him/her to become part of TQM programs, either as a participant or as who designs it. This allows him/her to understand a general panorama and the specific details of total quality. Three Credits.

#### **MGMT 431 - Integral Seminar**

Comprehensive, theoretical, conceptual and decision analysis approach from the perspective of strategic change. This course allows application of knowledge, skills and abilities acquired in previous courses in order to improve the effectiveness and efficiency of the company. Emphasis is placed on research as an essential element in a strategic context, linked to changes occurring in the economy, technology, labor, business and trends in the discipline of study. The course is based on the analysis of case studies and research from international companies. Three Credits.

## Bachelor of Science in Sign Language Interpretation

In the Sign Language Interpretation Program, the student will develop advanced knowledge, skills, and professional disposition to become an interpreter. The student will convert a verbal language into sign language, for one or more deaf, hard of hearing people allowing communication with others who have no experience in sign language or hearing. Interpreters will work in public or private institutions on classroom settings, television stations, healthcare settings, legal settings, conferences, theaters, sporting events, or other types of events. It is the first program of its kind in Puerto Rico and the Caribbean.

### Curriculum (120 credits)

Courses	Title	Credits	Requisites
<b>General Education – 42 credits</b>			
FSED 105	Seminario de Primer Año	3	
SPAN 152	Fundamentos de Lectura y Redacción	3	
SPAN 250	Técnicas de Redacción	3	SPAN 152
SPAN 255	Investigación y Redacción	3	SPAN 250
ENGL 152	Fundamento de lectura y redacción	3	
ENGL 153	Inglés Comunicativo Avanzado	3	ENGL 152
ENGL 331	Comunicación Oral	3	ENGL 153
MATH 120	Álgebra Introductoria	3	
BIOL 103	Compendio de Ciencias Biológicas	3	
HUMA 111	Civilizaciones y Cultura Universal I	3	
HUMA 112	Civilizaciones y Cultura Universal II	3	HUMA 111
HIST 253	Compendio de Historia de Puerto Rico	3	
SOSC 111	Individuo, Comunidad, Gobierno & ...I	3	
SOSC 112	Individuo, Comunidad, Gobierno & ...II	3	SOSC 111
<b>Core Courses – 6 credits</b>			
HESC 360	Estadística aplicada a Ciencias de la Salud	3	MATH 120
HESC 365	Investigación en Ciencias de la Salud	3	HESC 360
<b>Concentration courses – 66 credits</b>			
SIGN 121	Aspectos Históricos y Socioculturales de la Cultura del Sordo Puertorriqueño	3	
SIGN 102	Lenguaje de Señas I: Fundamentos, Deletreo y Números	3	
SIGN 106	Comunicación Viso-gestual y Clasificadores	3	
SIGN 201	Lingüística en Lenguaje de Señas	3	
SIGN 103	Lenguaje de Señas II: Conversacional	3	SIGN 102
SIGN 104	Lenguaje de Señas III: Narrativo	3	SIGN 103
SIGN 105	Lenguaje de Señas IV: Avanzado	3	SIGN 103, SIGN 104
SIGN 122	Discurso del Lenguaje de Señas	3	SIGN 104
SIGN 203	Introducción a Interpretación de Lenguaje de Señas	3	
SPTH 257	Introducción a Audiología y Rehabilitación Aural	3	
SIGN 416	Aspectos Psicosociales de la Sordera	3	SIGN 121
SIGN 302	Principios Ético y Profesionales en la Interpretación	3	SIGN 203
SIGN 204	Destrezas del Proceso de Interpretación	3	SIGN 203
SIGN 303	Interpretación Consecutiva	3	SIGN 203
SIGN 400	Interpretación Simultánea	3	SIGN 303
SIGN 405	Interpretación Frases Idiomáticas y Cultura	3	SIGN 400
SIGN 420	Interpretación en Escenarios Legales	3	SIGN 400
SIGN 406	Interpretación en Escenarios de Salud	3	SIGN 400
SIGN 425	Proyecto de Lenguaje de Señas	3	HESC 365
SIGN 402	Modelos de Interpretación	3	SIGN 403, SIGN 303

Courses	Title	Credits	Requisites
SIGN 403	Práctica y Teoría de Interpretación Simultánea I & Internado	3	SIGN 400, SIGN 303
SIGN 404	Práctica Interpretación Simultánea II	3	SIGN 403 SIGN 402
		66 crd.	
<b>Directed Electives – 6 credits</b>			
SIGN 407	Interpretación del entorno educativo	3	
SPED 315	Psicología y Educación del Niño Excepcional	3	
SPED 312	Educación a Niños con Problemas Específicos del Aprendizaje	3	SPED 315

**FSHS 105 - Freshman Seminar in Health Sciences - Three Credits**

The course focuses on strengthening basic knowledge and skills at the personal, intellectual and technological level necessary to succeed in academic activities, performance, and adjustment to university life. Each student will participate in mentorship activities that will continually build upon skills and knowledge base in the advancement of student development. Important emphasis is given to the integral development of humanistic fulfillment and academic success. Students are guided through a series of activities on the university campus, exposing them to services offered by the institution and the School of Health Sciences. The goal is to instill in students feelings of security and confidence in managing and solving personal and academic situations.

**SIGN 121 - Historic and Socio-cultural Aspects of the Puerto Rican Deaf Culture - Three Credits**

This course explores the history of the American Sign Language, the different Artificial Sign Systems and their linguistic relation to the Puerto Rican Sign Language. It also considers the sociolinguistics aspects by which the deaf people identify themselves as a linguistic minority group. This course also includes an analysis of the development of Puerto Rican Sign Language and its historical sociopolitical status. The analysis of this history is based on research of both American and Puerto Rican Sign Language. In this course we discuss the reasons why Deaf people have been considered a linguistic minority.

**ENGL 152E - Fundamentals of Reading and Writing Enhanced - Three Credits**

This course develops and strengthens students' listening, speaking, reading, and writing proficiency in English. It includes grammar, vocabulary expansion, reading skills, writing mechanics, sentence writing and descriptive, narrative, opinion, and cause/effect paragraphs. In addition to class hours, students must participate in the English laboratory and use a virtual learning platform.

**SIGN 102 - Sign Language I: Foundations, Spelling and Numbers - Three Credits**

The course is designed for the student who does not have previous Sign Language experience. The purpose of the course is to develop receptive and expressive skills directed towards the development of basic dialogue, and is taught in a functional scenario. The dialogues are geared to conversations related to daily interactions: introducing oneself, exchanging personal information, talking about the surroundings, and indicating where one lives. Students will also learn about the deaf community and its culture.

**SOSC 111 - Individual, Community, Social and Ethical Responsibility I - Three Credits**

This course centers on the historical development of the social sciences and their relevance in contemporary society. It emphasizes the study of individuals as members of a community. Their social, biological, cultural and psychological dimensions, along with their ethical and social responsibilities, will also be examined.

**SPAN 152 - Fundamentals of Reading and Writing - Three Credits**

This course develops paragraph writing skills, as well as the structure, the characteristics, and methods for the organization of ideas through the reading and analysis of texts. Basic elements of communication and the Spanish language are studied, in addition to the features of narrative and descriptive discourse.

**SIGN 103 - Sign Language II: Conversations -Three Credits**

The course is designed for the student who has previous Sign Language experience. The purpose of the course is to develop abstract concepts and to teach students to express themselves about issues outside the classroom setting. In this course students will also develop narratives and learn how to locate objects and persons. The students will have the opportunity of learning cultural aspects of the deaf community. They will also learn conversational strategies and how sign language users maintain each other's attention.

**SIGN 201 - Sign Language Linguistics Classifiers - Three Credits**

This course will include fundamental linguistic concepts founded in oral languages that have been used as a linguistic theoretical frame work and have been applied for the analysis of sign languages. It considers the work developed by sign language linguists, their contributions and issues raised by these professionals and how their linguistic and sociolinguistic research have changed the vision about deafness, deaf people, sign languages and interpreting.

**SIGN 106 - Visual gestural communication and Classifiers - Three Credits**

This course will develop Sign Language skills through the use of descriptive classifiers and non-manual signals. It will assist the student in acquiring fluent fingerspelling and the use of visual receptive and expressive skills. It will also provide concentrated instruction and practice in cardinal and ordinal numbers as well as number incorporation. A brief history of the different manual alphabets used in different countries will be included.

**ENGL 153 @ - Advanced Communicative English - Three Credits**

This is a performance course designed to improve writing and communication skills in English. Students will learn how to choose a topic, gather information and ideas, create topic sentences, construct a thesis statement, and write four different types of essays. The course also provides writing models, guided structural activities, and integrated grammar lessons.

**SPAN 250 @ - Writing Techniques - Three Credits**

This course will develop oral and writing skills, which will enable composition at the university and professional level. Diverse strategies will be used for the reading and writing of expository, argumentative and professional texts.

**SIGN 104 - Sign Language III: Narratives - Three Credits**

The course is designed for the student who already has Sign Language skills. The purpose of the course is to develop the linguistic abilities necessary to explain ideas or concepts, describe how and why things are, and how they work. The course will help students develop the ability to translate from written text to Sign Language. The students will use Sign Language to express experiences, stories, and other aspects of a narration. Information about the linguistic vocabulary and cultural aspects and will be presented using Sign Language as the primary language and Spanish as the secondary language.

**SIGN 416 - Psychosocial Aspects of Deafness - Three Credits**

This course will study the psychological, emotional and social impact of hearing loss throughout the cycle of life. The role of the interpreter as a non-professional advocate in the rehabilitation process of people who have hearing loss and their families will also be considered.

**SIGN 203 - Introduction to Sign Language Interpreting - Three Credits**

This course will provide students the opportunity to know the history of interpretation, the terminology used in the field and the competence that a sign language interpreter needs to have. Students will also learn basic ethical concepts, dress codes and the diverse work scenarios. During the semester, students will have to opportunity to watch demonstrations in the classroom and to discuss different cases.

**SOSC 112 - Individual, Community, Social and Ethical Responsibility II - Three Credits**

This course analyzes the experience of the individual as a member of a community: civic, political, economic and environmental dimensions along with their ethical and social responsibilities will be addressed.

**SPAN 255 @ - Research and Writing - Three Credits**

This course aims to develop students research and advanced academic writing skills. Throughout the course, the process of critical inquiry (the selection of a topic, statement and resolution of a hypothesis, and the search, revision and use of data, its revision and use) will be covered. In addition, the writing (pre-writing, organization of details, edition, correction, re-writing), will be emphasized

**SIGN 105 - Sign Language IV: Advance - Three Credits**

This course is designed for the student that already has Sign Language experience. The course has the purpose of developing receptive and expressive skills of more complex aspects of Sign Language such as poetry and literature, artistic and abstract messages. The course focuses in going from informal to formal usage of language. The student will also explore how to translate written text into ASL

**SIGN 122 - Sign Language Discourse - Three Credits**

This course will help students to gain an understanding of discourse, and to recognize features of discourse used in American and Puerto Rican Sign Language, such as register, spatial mapping, prosody, discourse structures, rhetorical analysis, involvement and interaction strategies, as well as coherence and cohesion, and framing. Students will enhance their own use of American and Puerto Rican Sign

Language through incorporation of those features. The laboratory will provide an interactive experience in environments in which the students will have the opportunity to observe features of American and Puerto Rican Sign Language discourse that are explored in class.

**SIGN 303 - Consecutive Interpreting - Three Credits**

This hands-on course will provide in-depth study and practice of interpretation through the understanding and use of the consecutive model of interpretation. Students will further develop requisite skills such as text analysis, mind mapping/visualization, multi-tasking strategies, prediction and anticipation. Student will also understand the three models of interpreting (Cokely, Colonomos, Gish). They will be exposed to process management skills, and will enhance their use of tools for self-analysis and peer feedback.

**HUMA 111 - Civilizations and Universal Culture I - Three Credits**

The course analyzes the development of the human being with emphasis on culture, arts, philosophy, religions and ideas, thus encouraging students to understand the differences between countries and societies from their origins until the Middle Ages.

**SIGN 204 - Interpreting Process Skills - Three Credits**

This course is an introduction to the fundamental cognitive skills needed in Sign Language Interpretation. The course focuses on the development of cognitive skills with the models of the interpretation process. The course addresses the need to focus on complex information and hadling different information at the same time. Aspects of listening, analyzing and trnsferring information will also be discussed. A self-evaluation process is addressed

and practiced throughout the course. In addition, a digital Language Portfolio is completed as evidence of language knowledge in both the native language (Spanish) and Sign Language, English language is optional for this portfolio.

**ENGL 331 - Oral Communication - Three Credits**

This course deals with the theory and practice of public speaking. It emphasizes the importance of nonverbal communication (body language, eye contact, attire) and verbal techniques (pronunciation, intonation, volume, and rate). Effective interpersonal and intercultural communication is also discussed. Students will practice delivering a variety of speeches, which include self-introduction, personal experiences, informative and persuasive speeches in an organized and coherent manner. Some speeches require the use of visual aids and technology.

**MATH 120 - Introductory Algebra -Three Credits**

The course deals with elementary algebra topics such as: theory of sets, real numbers, algebraic expressions, equations, linear inequalities and operations with polynomials.

**SIGN 302 - Ethical and Professional Principles in Interpreting - Three Credits**

Interpreters are often in situations that may conflict with their own value systems. This course will provide an exploration of the personal ethics and values that influence the decision-making process. Students will: identify the source of conflicts; analyze the situation from the perspectives of the deaf clients, agency and interpreter, and make recommendations for action. Students will examine moral considerations and ethical systems, address power relationships between the non-deaf interpreter and the Deaf Community, and incorporate their impact in functioning as facilitators of communication. Students will use case studies to explore issues, make recommendations and discuss the consequences of each decision.

**SIGN 400 - Simultaneous Interpretation -Three Credits**

This hands-on course will provide in-depth study and practice of interpretation through the understanding and use of the simultaneous model of interpretation. Students will further develop requisite skills such as text analysis, mind mapping/visualization, multi-tasking strategies, prediction and anticipation. Furthermore, they will be exposed to process management skills and will enhance their use of tools for self-analysis and peer feedback. Skills in both voiceto-sign and sign-to-voice will be studied and practiced during class work.

**BIOL 103 @ - of Biological Sciences - Three Credits**

Science course that prepares the student to acquire the fundamental concepts of the Biology Science such as: matter characteristics, the cell, introduction to Physiology, Human Anatomy and introduction to genetics. Said course is offered to the Health Science students

**HESC 360 -Statistic Applied to Health Sciences - Three Credits**

This is the third required core course for all students completing BS studies at the School of Health Sciences, with the exception of students of Speech Language Therapy and Dietetics and Nutrition, who are encouraged to take the course as an elective. The course provides a discussion of statistical methods applied to the health professions. In this course students expand on the knowledge introduced in HESC 340, Health Sciences Research. Emphasis is placed on qualitative and quantitative statistical analyses applied to clinical research, according to different research designs.

**HUMA 112 - Civilizations and Universal Culture II - Three Credits**

Study of the development of the human being with emphasis on culture, arts, philosophy, religions and ideas, encouraging the individual to understand the differences between countries and societies from the Renaissance to the present.

**SIGN 403 - Practicum and Theory of Simultaneous Interpreting i & Internship - Three Credits**

In this course of advanced practice on the Interpretation of Sign Language Puertorriqueño develops the understanding and use of consecutive interpretation and the transition to simultaneous interpretation mode. Students develop skills through study and practice in: text analysis, visualization, skills management process and tools for self-analysis and feedback from their peers. Students will complete 100 hours of practice in Sign Language Interpretation in at least three (3) different scenarios.

**HIST 253 @ - History of Puerto Rico (Compendium) - Three Credits**

The course is a compendium of the history of Puerto Rico from prehistory to the present. It begins with a discussion of the principal geographical aspects of Puerto Rico. Socioeconomic, political, cultural, and religious issues will also be analyzed and interpreted from a panoramic perspective.

**SIGN 405 - Interpreting Idioms and Culture - Three Credits**

This course is designed to enable the interpreting student to list and study many of the different cultural idioms in Puerto Rico and other Spanish-speaking communities. Through the use of comparison and analysis of traditional and typical phrases, the student will be able to look for meaning in various contexts. This course will help the student with the development of analytic thinking to be used in any interpreting situation of idiomatic phrases. The student will also analyze songs, poetry and theater. Students will have both didactic and practice experiences in the classroom

**SIGN 402 - Interpretation Models - Three Credits**

This course will provide further in-depth study and practice of Sign Language interpretation through the understanding and use of the simultaneous mode of interpreting. Students will focus on both individual and team interpreting and will work with selected team mates in two separate rotations. They will compare transliteration and interpretation and will practice both methods. Students will also review the business of interpretation and the settings in which interpreters work, as they prepare to begin working in the field as interpreters. Deaf individuals will be invited to class to participate as the audience for interpreting practice.

**HESC 365 @ - Health Sciences Research - Three Credits**

This core course is required for undergraduate students at the School of Health Sciences. Specific attention is given to the relationship between research outcomes and clinical practice. This course prepares students to analyze research literature in the health sciences critically. Students also have the opportunity to apply the scientific method to clinical research. Funding opportunities available to develop research studies in health sciences are presented and discussed.

**SIGN 420 - Interpreting in Legal Settings - Three Credits**

This course is designed for the advanced interpreting student. The course has the purpose of reviewing all the processes that take place in legal settings. The course focuses in the development of appropriate protocols in court houses and legal context facilities at different levels and registers. The student will experience different levels of interpretation from client interview level material to trial procedure considerations and material in various legally related topics and settings.

**SIGN 406 - Interpreting in Health Settings - Three Credits**

This course is designed for the advanced interpreting student. The course has the purpose of reviewing all the processes that take place in medical settings. The course focuses in the development of appropriate protocols in hospitals and medical facilities at different levels and registers. The student will experience different levels of interpretation from patient interview level material to surgery considerations and material in various health related topics and settings.

**SIGN 404 - Simultaneous Interpretation Practicum II - Three Credits**

In this advanced practice course in Sign Language Interpretation, the student will develop a high level of complexity in the interpretation of formal records and scenarios. Through exposure to real scenarios, students will develop the skills of: discourse analysis, prediction and anticipation, self-monitoring and correction. Through the strategy of teamwork during the performance, the student will develop the skills of working as a couple and receive and give feedback from their peers in an appropriate manner. The student will develop the advanced skills of voice and sign in various registers. formal and levels of complexity, in the various practice scenarios.

**SIGN 425 - Sign Language Project - Three Credits**

The accomplishment of this requirement will become an important academic contribution to the knowledge and understanding of the Puerto Rican Deaf Community and Interpreters linguistic situation. The results of the projects developed by the students will provide the opportunity to apply them in the linguistic planning of deaf education, interpreting curriculum and understanding of important aspects of the history of the Deaf in Puerto Rico.

**SPTH 257 Intervention with Infants and Children with Auditory Dysfunction Three Credits**

The course centers on the study of key clinical aspects for the delivery of aural habilitative and rehabilitative services to infants and children with hearing loss. The different types of hearing loss diagnosed in infants and in regular and special education students will be discussed. Strategies and methods for aural habilitation and auditory training will be discussed.

### Bachelor in Education Level Fourth to Sixth

The School of Education is committed to the development of education professionals who contribute to transforming educational organizations through their execution as thoughtful, collaborative and highly effective leaders in their personal and professional endeavors. This baccalaureate provides a training space for future innovative teachers at the fourth to sixth grade level; prepared to design learning environments that foster a meaningful experience of acquiring knowledge of academic subjects.

#### Curriculum (123 credits)

Course	Title	Credits	Requirements
<b>General Education Courses</b>			
FSED 105	Seminario de Primer Año	3	
SPAN 155-N	Fundamentos de Lectura y Redacción	3	
SPAN 250-N	Técnicas de Redacción	3	SPAN 155-N
SPAN 255-N	Investigación y Redacción	3	SPAN 250-N
ENGL 154-N	Inglés Comunicativo Básico	3	
ENGL 155-N	Inglés Comunicativo Intermedio	3	ENGL 154-N
ENGL 223-N	Compendio de Lectura y Escritura	3	ENGL 155-N
MATH 120E	Álgebra Introdutoria Intensiva	3	
MATH 120EL	Laboratorio Álgebra Introdutoria Intensiva	0	
INSC 101-N	Ciencias Naturales Integradas I	3	
INSC 102-N	Ciencias Naturales Integradas II	3	
HUMA 115 N	Civilización Occidental I	3	
HUMA 116-N	Civilización Occidental II	3	HUMA 115-N
HIST 253-N	Compendio de Historia de Puerto Rico	3	
HIST 273-N	Compendio de Historia de Estados Unidos	3	
SOSC 103-N	Ciencias Sociales Integradas I	3	
SOSC 104-N	Ciencias Sociales Integradas II	3	SOSC 103-N
		<b>48</b>	
<b>Professional Courses</b>			
EDUC 106	Introducción a la Educación	3	FSED 105
EDUC 171	Desarrollo Humano y Aprendizaje	3	EDUC 106
EDUC 172	Psicología Educativa	3	EDUC 171
EDUC 205	Sociología Educativa	3	EDUC 171
PHED 210	Bienestar y Salud Integral en el Individuo	3	FSED 105
EDUC 214	Computadoras en la Educación	3	FSED 105
EDUC 276	Manejo de la Sala de Clases	3	EDUC 172
SPED 315	La Enseñanza del Niño Excepcional	3	EDUC 171
EDUC 420	Fundamentos Filosóficos de la Educación	3	EDUC 205
EDUC 363	Planificación y Diseño Curricular	3	EDUC 420
EDUC 355	Evaluación del Proceso Educativo	3	EDUC 205
EDUC 401	Seminario de Experiencias Clínicas	3	EDUC 363
EDUC 435	Seminario Interdisciplinario	3	42 créditos educación general
EDUC 436	Seminario de Integración Pedagógica	3	27 créditos educación profesional

Course	Title	Credits	Requirements
COMS 104	Servicio Voluntario Comunitario	3	EDUC 205/420
		<b>45</b>	
<b>Concentration Courses</b>			
EDUC 123	La Expresión Creadora del Niño	3	EDUC 106
EDUC 202	Preparación de Material Didáctico	3	EDUC 106
EDUC 211	Currículo y Metodología de la Enseñanza de Matemáticas de 4-6to.	3	MATH 120E
EDUC 212	Currículo y Metodología de la Enseñanza de Ciencias de 4-6to.	3	INSC 101-N
EDUC 215	Pensamiento Crítico y la Enseñanza de Estudios Sociales de 4-6to.	3	HUMA 115-N/SOSC 103-N
EDUC 216	Enseñanza, Diagnóstico y Corrección de la Lectura y la Escritura I	3	SPAN 250 - N
EDUC 217	Enseñanza, Diagnóstico y Corrección de la Lectura y la Escritura II	3	EDUC 216
EDUC 323	Literatura para Niños en la Educación	3	EDUC 202/SPAN 250-N
EDUC 447	Práctica Docente en el Nivel de 4-6to.	5	EDUC 435/436
EDUC 356	Seminario de Práctica Docente	1	Co-req EDUC 447
		<b>30</b>	

Promedio mínimo de concentración: 2.50 / Promedio mínimo de graduación: 2.50

### **FSED 105 - Freshman Seminar**

Course designed as a tool to assist college freshmen in achieving the adjustment needed to survive in higher education. It consists of a series of activities and educational experiences aimed at providing the first-year students with study skills needed for academic development. It also provides the students with the personal skills needed in making decisions that will result in improving self-esteem, self-recognition and the wish to be successful. Three Credits.

### **SPAN 155-N - Reading, Writing and Communication in Spanish**

Study and analysis of the written text taking into consideration the aspect of comprehension and the reading process. Analysis and interpretation of readings using the following as a reference frame: evaluation of the content of the message (inferences, critical analysis, distinguish amongst facts, opinion, and assumptions). To go beyond the meaning of the text and author's techniques, and resources. Construction of the written message from the paragraph and sequence of paragraphs for coherence of the message. Practice and use of grammatical structures dealing with imprecise or incorrect use of the language (barbarisms, solecisms, ambiguities, concordance, tautology-etc.). Development of techniques for oral presentations for an argumentative discourse. Three Credits.

### **SPAN 250 - Writing Techniques**

This course will develop oral and writing skills, which will enable composition at a university and professional level. Diverse strategies will be used for the reading and writing of expository, argumentative and professional texts. Three Credits.

### **SPAN 255 - Writing and Research**

This course aims to develop student's research and advanced academic writing skills. The process of critical inquiry (the selection of a topic, statement and resolution of a hypothesis, and the search, revision and use of data), as well as an emphasis on the writing process (pre-writing, organization of details, edition, correction, re-writing), will be covered throughout the course. Three Credits.

#### **ENGL 154N - Basic Reading Composition**

A basic level, first year course that will provide reading and writing development and grammar accuracy. It will focus on reading comprehension and analysis, development and application of topic sentences, development and relationship of ideas in the paragraph. The course was designed for education students. Three Credits.

#### **ENGL 155N - Intermediate Reading**

A basic level, first year course that will provide reading and writing development and grammar accuracy. It will focus on reading comprehension and analysis, development and application of topic sentences, development and relationship of ideas in the paragraph. The course was designed for education students. Three Credits.

#### **ENGL 223N - Reading Composition**

Is a second-year intermediate course that will provide paragraph, reading and writing development. It will focus on the development and application of the thesis statement, supporting and closing paragraph-essay using the APA format. Special emphasis will be given to pre-writing, outlining, revising, and editing essays. Facts and opinions, fallacies and generalizations will also be studied to avoid errors in logic. Three Credits.

#### **MATH 120 - Introductory Algebra**

This course studies elementary algebra topics such as: theory of sets, real numbers, algebraic expressions, equations, linear inequalities, exponents rules, operations with polynomials and factorization using common factor. Problem solving is of particular interest. Three Credits.

#### **MATH 120-E - Introductory Algebra Intensive**

This course studies elementary algebra topics such as: theory of sets, real numbers, algebraic expressions, equations, linear inequalities, area, perimeter, operations with polynomials and factorization using common factor. In addition, to class hours, students must attend the Math laboratory and utilize a virtual learning platform.

#### **INSC 101N - Integrated Natural Sciences**

Science course in which the student discovers the basic principles of physical and earth sciences. It prepares the student to make decisions and solve problems regarding the universe, their planet, their environment and surroundings. It provides the student the necessary skills to analyze published articles related to science discoveries. The development of scientific concepts is emphasized by the inquiry method through an interdisciplinary teaching and an integrated curriculum. Three Credits.

#### **INSC 102N - Integrated Natural Sciences II**

Science course in which the student apprehends and discovers the basic principles of chemistry and biology sciences. It prepares the student to make decisions and solve problems regarding the universe, their planet, their environment and surroundings. It provides the student the necessary skills to analyze published articles related to science discoveries. The development of scientific concepts is emphasized by the inquiry method through an

interdisciplinary teaching and an integrated curriculum. Said course is offered to the student of education and to the future elementary and secondary teachers. Three Credits.

**HUMA 115N - Western Culture I**

Humanities 115 traces the development of Western civilization from its roots in ancient Near Eastern civilizations to the end of the Middle Ages. It is conceived as a course in the development of Western culture that will instill in the students an appreciation of the origins and importance of their culture. Three Credits.

**HUMA 116N - Western Culture II**

Humanities 116 traces the development of Western Civilizations from the Modern Age (the Renaissance) up to the present day. It is conceived as a course in the development of Western culture that will instill in the students an appreciation of the origins and importance of their culture. Three Credits.

**HIST 253N - History of Puerto Rico (Comp)**

A Compendium of History 251-252, only for education students and social sciences students with a major in criminology. Three Credits.

**HIST 273N- History of the United States- Comp**

Studies the development of the American nation from the beginning of its society to the present. It emphasizes the evolution of political, social, and economic institutions, and the distinctive traits of its society. Three Credits.

**SOSC 103N - Integrated Social Sciences**

Study and integrated of the following Social Sciences: Psychology, Sociology and Geography. The course was designed for Education students. Three Credits.

**SOSC 104 - Integrated Social Sciences II**

Study and Integrated analysis of the following Social Sciences: Economy and Politics. The course was design for Education students. Three Credits.

**EDUC 106 - Introduction to Education**

First professional course in the curriculum of Teachers Preparation Program. It introduces concepts related to education while each student explores his/her commitment to teaching as a career, and his/her strengths and weaknesses. Special emphasis will be placed on observation and analysis of school scenarios, specially the teaching learning process. The students will complete fifteen hours (15) of clinical experiences. Three Credits.

**EDUC 171 - Human Growth and Development**

Study of psychological thought related to the scientific facts that describe growth and development from birth through adolescence and their implications for the teacher and school. Changes that occur in human begins form the moment of conception and throughout the different stages of life such as prenatal, infancy, childhood, adolescence and adulthood, adolescence and adulthood are studied from physical, psychomotor, social, psychological and moral viewpoint. Three Credits.

**EDUC 172 - Educational Psychology**

This course offers a wide overview of concepts related to learning and intelligence and their relationship with human development. Topics discussed are psychometric techniques, styles and theories of learning, emotional development, moral development and ethical conduct, as well as the development of personality, mental and physical health. The course examines the relationship of these theories to educational practice and the role of the teacher. Three Credits.

#### **EDUC 205 - Educational Sociology**

The course is a study of culture and its relationship to the educational process. It covers phenomena of change and their educational implications. School is analyzed as a social and political system. The role of economics, history and the social sciences in education and educational thought is examined. Different socio-cultural principles are analyzed as they relate to the development of the educational system of Puerto Rico. Three Credits.

#### **PHED 210 - Health, Hygiene and Nutrition**

The course covers the theory and practice of the components of wellness and physical fitness lifestyles. Once medical records and health risk profiles are developed, and physical fitness levels are established. Students are exposed to information, activities, techniques and strategies to obtain and maintain acceptable levels of physical fitness that allow an effective life. Lifelong sports, weight control, stress management, and nutritional theories will be discussed. Three Credits

#### **EDUC 214 - Computers in Education**

. This course introduces general concepts about the structure of computers, their impact on modern society and their integration into the educational process. The course provides laboratory experiences in which the student will practice acquired knowledge in diverse situations related to teaching. Students will learn the use of computers as teaching and learning tools and will integrate the use of other emerging technology into their learning experience. Three Credits.

#### **EDUC 276 - Classroom Management**

This course promotes the integral development of the student within a constructivist approach, together with the development of critical thinking and philosophy of total quality. Theories and models of classroom management will be studied. Techniques and strategies for group control and behavior modification will be investigated. The course will promote activities that will have as a purpose the practice, observation, and analysis of the daily routine of a teacher. Three Credits.

#### **SPED 315 - TEACHING EXCEPTIONAL CHILDREN**

Introductory course in special education. Analysis of social, emotional and educational needs of children with exceptional qualities diagnostic, educational and rehabilitation services, family, community attitudes and civil rights. Emphasis on the educational needs and learning styles of exceptional children: teaching, methods, techniques and inclusion process. Also includes the analysis of the assistive technology used for the different necessities of the exceptional children. Three Credits.

#### **EDUC 420 - Philosophical Foundations of Education**

Students will examine, analyze, and critique the historical, philosophical and cultural roots of our educational system and its changes over time. The basis for an educational philosophy will be studied, along with social,

cultural, religious and political changes that have influenced education in Puerto Rico. Some philosophical concepts will be examined, such as, idealism, realism, pragmatism, existentialism, and constructivism.

### **EDUC 363 - Curriculum Planning and Design**

This course prepares the future teacher in the development of curricular theories. Types of curricula, and the organization, models and concepts, curriculum development and implementation, are examined and analyzed. Lesson planning and classroom organization are also discussed. Three Credits.

### **EDUC 355 - Evaluation of the Educational Process**

Theory and practice of the educational evaluation process. Emphasis is placed on the taxonomy of objectives, the skills for stimulating achievement in the student, the current concepts in evaluation criteria and in performance and mastery test, among others. Traditional concepts of preparation, administration, correction and interpretation of progress test, and basic concepts of statistics as well as recent evaluation criteria such as assessment strategies and the use of portfolios is discussed and analyzed. Three Credits.

### **EDUC 401 - Clinical Experiences Seminar**

Educ. 401 is the second clinical experiences requirement in the School of Education's teacher education programs. It includes fifteen hours in a campus-based seminar and 30 clinical experiences hours of direct observation and active participation in at least two different school scenarios. Three Credits.

### **EDUC 435 - Interdisciplinary Seminar**

Professional seminar that integrates the socio-humanistic and scientific academic knowledge developed by the teacher candidate during his training. Discussion and analysis of trends, methods and innovations related to fundamental knowledge and communication skills of the candidate to teacher in their local and global context. Emphasis is placed on the use of case studies, problem solving, thematic discussions and application of technology. Three Credits.

### **EDUC 436 - Pedagogical Integration Seminar**

The EDUC 436 course integrates the knowledge of academic and professional character acquired during the years of study of the teacher candidate. New trends in the field of education, methods and innovations, techniques and other issues related to education and the Master Certification Test (PCMAS) are discussed and analyzed. Three Credits.

### **EDUC 123 - Creative Expressions in Young Children**

Study of the methods, materials and techniques used in developing basic skills in music, arts and drama in young children. Processes used to initiate singing, basic rhythms, use of simple instruments, arts and craft materials, use of puppets, improvisation and dramatization according to child's age development and maturity from preschool to sixth grade will be practiced. Discussion of ways used to motivate free expression and creativity in infants and young children. Development and awareness and appreciation of the fine arts in young children is included. Three Credits.

### **EDUC 202 - Teaching Materials and Learning Devices**

laboratory course which combines graphic and instructional media processes for education and training purposes. Techniques for integrating media into instruction are examined. Student will develop instructional material taking

into consideration principles of communication, appropriate and effective design, and the use and evaluation of these materials. Three Credits.

**EDUC 215 - Critical Thinking Skills and the Teaching of Social Studies in Elementary School**

This course is designed to prepare the future teacher in the content and skills of the social studies program for grades Pre-k through Sixth of the elementary school. It examines in depth themes related to the development of mental processes, intellectual skills, processes used for conflict resolution, and the development of ideal attitudes and values expected of a future teacher. Standards of the Social Studies Program of the Department of Public Education are used as base reference. Three Credits.

**EDUC 211 - Curriculum and Teaching of Mathematics in Fourth to Sixth Grades**

This course prepares future teachers by exposing them to techniques, processes, strategies and means to teach mathematics in grades four through six. The development of mathematical skills will be emphasized, as well as practice of the inductive method. The Standards for the Mathematics Program published by the local Department of Education will be examined. The use of the computer as a learning tool is explored and emphasized. Three Credits/

**EDUC 212 - Curriculum and Teaching of Science in Fourth to Sixth Grades**

This course studies and analyzes the foundations, theories, principles, skills, concepts, planning, research, implementation and curriculum for the teaching of science in the fourth to the sixth grades. Considerable emphasis is placed on hands-on science activities and on those teaching strategies which help children learn processes and concepts of science. The Standards of the Science Program published by the local Department of Education are examined. The use and integration of technology is emphasized.

**EDUC 216 - Teaching of Reading in Fourth to Sixth Grades**

Theoretical and practical study of essential aspects needed to teach reading in elementary grades fourth to sixth. Conceptual models and official documents of the Department of Education are studied and analyzed. Examination and discussion of selected literature appropriate for the grades fourth to sixth. Three Credits.

**EDUC 217 - Teaching of Writing in Fourth to Sixth Grade Three Credits**

This course will prepare future teachers in grades fourth to sixth with basic techniques needed to develop writing skills, calligraphy, spelling and creativity. Standards of Excellence of the Spanish Program of the Department of Education will be examined. Available commercial materials for the teaching of writing will be examined. Future teachers will practice the production of materials for the needs of each child. This course will combine theory and practice and will develop in the future teacher the skills needed to teach writing as a process of communication. Three Credits.

**EDUC 323 - Literature for Children from Preschool to Sixth Grade**

This course offers the future teacher, in a theoretical and practical form, the most essential materials related to children's literature within the elementary school program. The future teacher must be knowledgeable of a select and ample amount of children's literature and the methodology that will enable him/her to instill the enjoyment of good literature in children and also inspire them to create their own. In this course, books, works of art, fiction, folklore, poetry and games will be studied. Creativity will be stimulated. Three Credits.

**EDUC 447 - ELEMENTARY SCHOOL PRACTICE**

Teaching practice course for students of the concentration in grades 4-6 of the Elementary School. It is a clinical experience in which the teacher candidate puts into practice the knowledge, skills and attitudes acquired in the preparatory courses. The teacher candidate will gradually assume responsibility for teaching in the classroom. Three Credits.

**EDUC 447 - Practicum Teaching Forth to Sixth Grade**

This is a laboratory experience for students whose major is Fourth to Sixth Grade Education. The student teacher will participate in a real educational setting to practice knowledge acquired in education courses. The student teacher will gradually assume the responsibility of teaching in a real classroom. Five Credits.

**EDUC 356 - Seminar School Practicum**

The purpose of this seminar is to analyze, think critically and confront the inherent experiences of the teaching practice process. The student performing the teaching practice focuses his/her pedagogical action in a public or private school setting in any of the educational levels. The student will practice teaching in his/her content area to a group of students with the purpose the apply theories approaches an methods that will transform the students teaching practice in permanent critical reflexive exercise. Three Credits.

**COMS 104 - Community Voluntary Services**

This course is designed with two specific goals. First, to provide the student practical experiences in real scenarios similar to the ones s/he will encounter after graduation. Second, and probably more important than the first, to develop a sense of civic responsibility and involvement in the student. A minimum of 15 hours of voluntary service in a non-profit agency, organization or institution is required. Three Credits.