GRADUATE Programs

Catalog 2015-2016

TURABO

UNIVERSIDAD DEL TURABO

SISTEMA UNIVERSITARIO ANA G. MÉNDEZ

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 mentioned in this catalogue may be modified, consolidated with other programs or 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.

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OUR PROFILE

Universidad del Turabo 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 certificates, associate, bachelors, masters and doctoral degrees. The University currently offers 28 associate degree programs, 51 bachelor degree programs, 51 master's programs, and seven (7) doctoral degrees.

The academia is organized into nine (9) main schools: International School of Design and Architecture, School of Engineering, , Natural Sciences and Technology, Health Sciences, Social Sciences and Communications, Education, Business and Entrepreneurship, Technical Studies, the School of Continuing Education, the Deanship of General Education, and one (1) SUAGM systemic, the School of Professional Studies.

The General Education Deanship 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 Deanship of General Education 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.

Universidad del Turabo 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 del Turabo 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-one (231) full-time faculty members and three hundred forty-seven (347) full-time equivalent professors. The full-time faculty members hold doctorates and master's degrees in their fields of expertise. Nearly sixty (60) percent of Universidad del Turabo's full-time faculty hold a doctoral degree and thirty-five (35) percent of part-time faculty holds a doctoral degree. The gender distribution of the faculty is equally divided. Universidad del Turabo is a member of the Ana G. Méndez University System.

VISION

The vision of Universidad del Turabo is to be a high quality learning community dedicated to enhancing education among its student population and promoting advanced technology with an international orientation.

MISSION

The mission of Universidad del Turabo is to enhance knowledge through excellence in teaching, and to foster research, innovation, and the internationalization of its programs.

The University is committed to graduating well-educated, professionally competent students who can think critically and are technologically literate. The institution also promotes the development of ethical principles and values that will allow our graduates to contribute to the well-being of the community through their knowledge of social systems and their role as responsible citizens.

VALUES

Universidad del Turabo is committed to:

- Freedom of thought and expression.
- Recognition of and respect for diversity.
- Respect for the dignity of the individual.

- Excellence in teaching and the generation, dissemination and application of knowledge.
- Promotion of ethical, social, and cultural values.
- Excellence in planning, operations and service.
- Respect for nature and the environment.
- Promotion of human and esthetic sensibility.

INSTITUTIONAL GOALS

To accomplish its mission, the institution recruits and develops quality human resources to excel in academic affairs, community involvement, cultural development, international collaboration, and sports. Universidad del Turabo will:

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

Accreditation and Affiliations

Universidad del Turabo is accredited by Middle States Commission on Higher Education (MSCHE), 3624 Market Street, Philadelphia, PA 19104, 267-284-5000.
The MSCHE is a regional accrediting agency recognized by the U.S. Department of Education.

The University is a member of the following organizations:

- College Entrance Examination Board
- American Council of Education
- American Association of Colleges for Teacher Education
- American Library Association
- Hispanic Association of Colleges and Universities
- American Assembly of Collegiate Schools of Business
- National Universities and Continuing Education Association

Universidad del Turabo has established Memorandums of Understanding (MOUs) with several institutions in engineering and science. The affiliations include:

- New Mexico State University
- Georgia Institute of Technology
- Science and Technology Alliance: a consortium of Sandia National Laboratories, Oak Ridge National Laboratory, Los Alamos National Laboratory, New Mexico Highlands University, North Carolina A&T, and the Ana G. Méndez University System
- Rensselaer Polytechnic Institute
- Lawrence Berkeley Laboratories
- University of New Mexico
- Consortium for Minorities in Teaching Careers

Universidad del Turabo has extended its outreach through collaborative agreements on an international scale, promoting the exchange of students and professors with institutions such as:

- Universidad Andrés Bello in Chile
- Universidad Sergio Arboleda in Colombia
- Universidad Nacional Pedro Henríquez Ureña in the Dominican Republic

STATEMENT OF LICENSURE

Licensed by the Puerto Rico Council on Education.
Licensed by the State of Pennsylvania to offer the master's degree in education in the teaching of English as a second language.

Central Administration and Board of Directors

Universidad del Turabo is a member of the Ana G. Méndez University System. A fifteen (15)-member board of trustees governs the System. Of these, five (5) are permanent and the board appoints ten (10) for four-year terms. The board is composed of distinguished educators, experienced executives, and civic and community leaders.

The executive officers of the System are: the President, the Vice President for Academic Affairs, the Vice President for Administrative Affairs, the Vice President for Human Resources, the Vice President for Planning and Research, the Vice President for Marketing and Student Affairs, the Vice

President for Financial Affairs, and the Legal Adviser. They are appointed by the Board of Trustees.

The System's bylaws define the objectives, powers, officers, committees, meetings and financial affairs of the institutions. They also specify the way in which the bylaws and regulations of each one of the autonomous institutions will be approved.

The Board is the policy-making, legislative and fiscal body of the System. It approves the mission of the System and its institutions, and its annual and special budgets; administers its business; confirms appointments; establishes compensations; approves academic programs and long-range institutional plans; and supervises the distribution of funds.

The Board has four standing committees:

- Executive
- Academic
- Student Affairs
- Finance and Auditing
- Planning and Institutional Advancement

Board of Directors

Mr. Ramiro Millán Catasús, President of the Board
Dr. Félix Rodríguez Schmidt, Vice-president of the Board
Dr. José F. Méndez González, President of SUAGM
Dr. Víctor Hernández
Mr. José F. Méndez, Jr. Permanent Member
Mr. Héctor A. Jiménez Ramírez,
Mr. René A. León Rodríguez
Mr. Rafael A. Nadal Arcelay, Esq. Permanent Member
Dr. Herminio Martínez
Sr. Manuel Agosto
Dr. René A. Soto Torres
Mr. Wilfredo Cosme Ortiz

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

CAMPUS ADMINISTRATION

Office of the Chancellor

Dennis Alicea / Chancellor
Gladys Betancourt / Vice-Chancellor for Administrative Affairs
Iris N. Serrano / Director of Public Relations
Jacqueline Mullen-Hunt / Vice Chancellor of External Resources
Alba Rivera / Assistant Vice-Chancellor of Development
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

Roberto Lorán / Vice-Chancellor
Elaine Guadalupe Ahedo / Associate Vice-Chancellor
Edna Orta Anés / Associate Vice-Chancellor for Administrative Affairs
Rafael Lozano / Associate Vice-Chancellor for Retention
Juan Del Valle / Associate Vice Chancellor for Evening and Saturday Programs
René Rodríguez / Assistant Vice-Chancellor for Faculty Evaluation and Development
Ernesto Espinoza / Assistant Vice-Chancellor for Assessment
Keila Roche León / Assistant Vice-Chancellor for Licensing and Accreditation
José R. Pérez Jiménez / Interdisciplinary Research Institute Director
Pilar Dávila / Virtual Education Director
Armando Soto / Webmaster

Graduate Studies and Research

Sharon A. Cantrell / Dean
Minerva Soto / Student Services Coordinator

General Education Deanship

Félix R. Huertas / Dean
Phillip Murray / Associate Dean
Beatriz Cruz / Language Department Director
Juan E. Roque / Humanities and Social Sciences Department Director
Angel Ojeda / Mathematics Coordinator
Sylvia Casillas / Language Center Director

School of Business and Entrepreneurship

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

School of Education

Israel Rodríguez Rivera / Dean
Jorge H. Garófalo / Associate Dean, Physical Education Department
Brenda Arroyo / Associate Dean
Maritza Oyola / Student Services Director
Carmen D. Rodríguez / Administrative Services Director

School of Engineering

Héctor Rodríguez / Dean
José R. Deliz / Associate Dean
Oscar A. Sáenz / Director, Industrial Engineering Department
Juan C. Morales / Director, Mechanical Engineering Department
José L. Colón / Director, Electrical Engineering Department
Luz C. Vilches / Director, Student Services
Rafael M. Rivera / Director, Institute of Telecommunications (IT+)

Nelson Martínez / Director, Institute of Engineering Technology

School of Health Sciences

Nydia V. Bou / Dean
Nilda I. Boria / Associate Dean for Administrative Affairs
Diannie I. Rivera / Associate Dean for Academic Affairs
Minerva Mulero / Director, Nursing Department
María A. Centeno / Director, Health Professions Department
Frank Valentín / Director, Naturopathic Medicine Doctoral Program
Carmen Santiago / Nursing Clinical Coordinator
Nelly González / Student Services Officer
Joannie Ortiz / Administrative Affairs Director
Ana D. Serrano /Administrative Affairs Coordinator
Angeliz Pérez / Academic Affairs Coordinator

School of Natural Sciences and Technology

Teresa Lipsett-Ruiz / Dean
Ileana González / Acting Associate Dean
María F. Barberena / Director, Department of Biology
José J. Ducongé / Director, Department of Chemistry and Physics
José Sánchez / Director, Department of Mathematics

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 V. Vera / Director, Communications Department
Jessica Velázquez / Director, Psychological Services Clinic

International School of Design and Architecture

Aurorisa Mateo / Dean
Rosa Musí / Associate Dean for Administrative Affairs
Elizabeth Castrodad / Associate Dean for Academic Affairs
Yazmín Crespo / Director, Architecture Department
Cristiano Carciani / Director, Fashion Design Department

School of Professional Studies

Mildred Y. Rivera / Assistant Vice-President and Dean
Viviana Barrabia / Associate Dean
Mabelis Viera /Director, Integrated Services
Jocelyn Gómez / Academic Director

School of Technical Programs

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

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

Glenda L. Bermúdez / Director, Off-Campus Center Yabucoa
Juan A. Rosado / Director, Off-Campus Center Cayey
Carmen L. Rivera / Director, Off-Campus Center Isabela
Carlos E. Maldonado / 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
María Del C. Santos Rodríguez / Assistant Vice Chancellor for Internship and Honor Scholarship Program
Carmen Pulliza / Assistant Vice Chancellor, Career and Placement
Zoraida Ortiz / Registrar
Melba G. Sánchez / Associate Vice-Chancellor of Admission and Marketing
Carmen J. Rivera López / 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
Nilda L. Toledo / Student Services Officer
Diriee Y. Rodríguez / Director, Admissions
Anabelle Solá / Director, Recruitment

Physical Facilities, Operations and Maintenance

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

Statement of Legal Control

The Ana G. Méndez University System 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 Ana G. Méndez University System 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 del Turabo 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 Ana G. Méndez University System. The Administrative Council includes the chancellor, who chairs it, the vice chancellor, the vice chancellor of student's affairs, the manager of physical facilities and operations, the deans of the academic divisions, five (5) faculty representatives, 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, six (6) school 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.

Important Note:
This catalog contains the major points of the current agreements between the students and Universidad del Turabo. The University limits its agreement to the semester or session in which the student is duly enrolled and has paid the corresponding fee.

It is the student's responsibility to know and comply with the rules expressed herein, which coincide with the current bylaws and regulations of the University, the administrative resolutions and the federal laws on civil rights.

Master's Programs General Admission Requirements

Students wishing to be admitted to Universidad del Turabo master's level programs must meet the following requirements:

1. Hold a Bachelor's degree or an equivalent degree from an accredited institution of higher education.
2. Submit an official credit transcript with the application for admission.
3. Complete an interview process with the director/coordinator of the graduate program or his/her representative, if required.
4. Submit three letters of recommendation, according to the program.
5. Submit an essay on a topic selected by the Committee, if required.
6. Whether is required by the School or a particular program, take one of the tests of admission to graduate studies offered by the Educational Testing Service, such as the Graduate Studies Admission Test (EXADEP), the Graduate Record Examination (GRE), or the Graduate Management Admission Test (GMAT). Test results are valid for five years.
   Candidates for program with additional admission requirements, such as additional tests, interviews and licenses, certifications, must comply with these requirements.
7. Submit a $25.00 nonrefundable application fee.

Specific requirement of each program are available at the Schools' section.

Readmission

1. Students must apply for readmission if they interrupted their studies for a full academic semester or more (summer sessions will not count as interruptions).
2. Students must have a cumulative grade point average equivalent to the retention index.
3. Students must have acquired a total number of credits equivalent to the required for the corresponding number of years of studies completed.
4. In the case of suspension for reasons of academic index accumulated credits, or for disciplinary reasons, the student must have complied with the period of suspension.
5. All candidates for readmission may be required to have an interview with the Dean of the Graduate Program or his/her representative if is necessary by the program.
6. Meet the requirements for the requested study program as well as other general admissions requirements.
7. Students who request readmission to UT are subject to the current curriculum of the study program where they have been admitted.

Transfer Students

Students from other accredited institutions must meet the following requirements for admission:

1. Transfer courses must be from an accredited university.
2. Must not have been subjected to any academic or disciplinary sanctions.

3. Must meet the admission requirements of the particular program and specialty to which they are applying.
4. Must satisfactorily pass an interview with the program director or his/her representative.
5. Submit two official credit transcripts with admission application. Students who are transferring from a university outside of Puerto Rico must submit a course catalog from the previous institution.
6. Description of each course must be provided by the Institution where it was taken.

Residence

Students who transfer to any graduate program at Universidad del Turabo must complete a minimum of twenty-four (24) credits in order to establish residence and be eligible for graduation.

Transient and Auditor Students

All transient and auditor students must observe the following.

1. Hold a Bachelor's degree or its equivalent from an accredited university.
2. Obtain permission from his/her University to take courses at Universidad del Turabo for a period not to exceed two semesters.
3. Apply for admission within the period established by the Admissions Office. Universidad del Turabo will admit students on a visiting or auditor status. Once registered, students admitted may attend regular courses at the institution, but will not receive either credit or grades. The Director may authorize students to take courses for professional growth only, and not directed towards obtaining an academic degree. These students will be classified as special students and will not qualify for financial assistance.

International Students

Admission of foreign students will be subject to current immigration laws. Candidates must be registered in SEVIS (Student Exchange and Visitors Information System) before being considered for admission. They are subject to the admission, readmission, and transfer requirements established by Universidad del Turabo.

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

Admission Appeals

Applicant students can appeal the admission decision. The plea has to be written to the dean of the school. The Dean will contact the applicant student. The appeal should be made within 15 days after student's knowledge about the decision. A copy of the plea should be sent to the admission office.

Effective Dates

Admission and readmission at Universidad del Turabo 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 the established requirements, will be considered provisional. If the documents are not received within 60 days from the first day of class, the institution may invalidate a provisional admission.

UNIVERSIDAD DEL TURABO
ADMISSIONS OFFICE
P O BOX 3030
GURABO PR 00778
TELEPHONE: (787) 746-3009
Web URL: http://ut.suagm.edu/

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 del Turabo. 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 Ana G. Méndez University System may amend standards and tuition fees.

Deferred Payment Plan to parents, tutors or adult students who do not receive financial aid. The recipient will sign a promissory note or such privilege 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 and will be required to pay a $20.00 fee for each incomplete grade in order to have it removed from the record.

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 del Turabo 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 work-study 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) 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.

Family Federal Educational Loans Program

The Financial Aid Office will recommend and process the loan directly to WACHOVIA 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 guaranty agency HIGHER EDUCATION SERVICES CORPORATION will pay the interest while the student is enrolled in a recognized post-secondary institution. The interest is variable but does not exceed 8.25 percent. Borrowers should check the interest rate on their promissory note.

Financial Aid Application and Renewal

The deadline for application or renewal of financial aid for the academic year is May 2. Applications received after this date will be classified as late applications and will be processed as such after receiving the applications submitted on time. Late applications will be reviewed if funds are available. 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 FAFSA form on the Web, in person at the Financial Aid Office or by mail at:

UNIVERSIDAD DEL TURABO
ADMISSIONS & FINANCIAL AID
P O BOX 3030
GURABO, PUERTO RICO 00778

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

Credit hour definition

At Universidad del Turabo (UT) 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, practicum, studio work, and other academic work leading to the award of credit hours."

Important Note
The above-mentioned aid is conditioned to the avail-ability 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 del Turabo 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 student 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 records, except to certain specified parties. (Parents and students must be notified of these rights transfer to students at certain points, and an office and review board has been designated at the federal Office of Health, Education and Welfare to investigate and decide on 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% x 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 will be referred by the Office of Admissions to the School for evaluation. 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 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.

REMEDIAL AND DEVELOPMENTAL COURSES

Financial aid recipients may receive aid for a maximum of 30 semester credit hours in developmental coursework. Students enrolled in remedial courses are expected to receive passing grades in those courses in order to progress into the next term. Remedial 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 re-establishing 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.
b. 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 classroom of announced courses and to close or eliminate sections or courses from its academic offerings.

Classification of Students

Full-time regular students at the masters' level are those who have registered for programs of no less than six (6) credit hours and are degree-seeking candidates. Half-time students are those with an academic workload from three (3) to five (5) credits hours and are degree-seeking candidates.

Academic Load

Academic load will not exceed nine (9) credits per term or summer session. An academic load or more than nine (9) credits will require prior approval by the dean of the school.

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 to 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 – 4 grade points per credit hour
B – 3 grade point per credit hour
C – 2 grade points per credit hour
D – 1 grade points 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 - To be awarded only with the Registrar's permission in courses that span more than one term.
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 is not being 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 have at least one partial grade, will be given an incomplete grade. Students must give the professor valid reasons for the absence from the final exam. It is the student's responsibility to make the necessary arrangements with the professor or the dean of the school to complete any final class requirements and/or take the final exam in order to remove the Incomplete grade. This must be done within the first thirty (30) days of the next academic session, in accordance with the dates established in the Academic Calendar. If the grade is not made up, it will be changed automatically to an F.

Grading System

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 (1) 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, WF, or 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. In the case of practicum courses, students will have only two opportunities to repeat the course, pending the recommendations and approval of the program dean and practicum supervisor.
e. A student will not be able to repeat a course until a grade has been posted.

Transfer Courses

In order to consider any transfer courses, students must be officially accepted in a master's program at the University. Transfer courses are evaluated by the Dean of the corresponding program.

Transfer Course Validation is conducted according to the equivalent courses offered at Universidad del Turabo.

Only courses completed with a grade of B or higher will be considered for transfer course validation. Courses considered for transfer validation must have been taken within a six (6) year period of the course validation request.

The Office of the Registrar will inform students about the outcomes of the transfer course validation process.

Courses that are included within completed masters programs will not be accepted for transfer course validation.

Course Substitution

The Dean of the corresponding School is authorized to evaluate substitute courses that have a similar academic content. Differences in credit hours will not be taken into consideration and will not affect the substitution process. However, in order to complete the total number of required credit hours, a student will need to take additional courses, upon recommendation of the Dean, to make up the difference in the total number of graduation credit hours required.

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 program or major if they comply with the following:

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

Students can apply for only one reclassification during a semester. No applications will be considered during the summer. The applications must be submitted within thirty (30) calendar days after the third week of class of each semester.

All enrolled credits and the cumulative average from the student's previous program will be considered for the purposes of the Satisfactory Academic Progress norm of the program into which the student has been reclassified.

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 deter-mine the academic status of the student.

Academic progress of students admitted as transfer students will be evaluated for retention purposes at the end of their first year; credits and grade point average prior to that year will not be considered.

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 the regulations will be placed on academic probation.

For retention indices and percentage of credits required, see Appendix.

Suspension of Students for Academic Reasons

Any student whose cumulative GPA is lower than the established retention index, or who do not complete the percentage of credit hours after a probation period, will be suspended from the University in accordance to the norms.

Suspension of Students for Disciplinary Reasons

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, which are available in the Students' Rights and Responsibilities Manual.

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.

Family Rights and Privacy Act Information Statement

Universidad del Turabo 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 del Turabo 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, (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.

Master's Graduation Requirements

Graduate students of Universidad del Turabo will be eligible to receive academic degrees after meeting the following requirements and procedures:

1. Completion of the courses required for the degree, as set down by the institution.
2. Completion of the number of credit hours required for the degree with a minimum Grade Point Average of 3.00.

3. The comprehensive exam is a graduation requirement for master's degree candidates in public affairs, counseling psychology, and education..
4. The completion of the practicum as required by the program.
5. The completion of a thesis or investigation seminar as determined by the corresponding graduate program, is a requirement for receiving the academic degree.
6. Transfer students must complete at least the last twenty-four (24) credit hours at Universidad del Turabo.
7. All students who enter to Universidad del Turabo will be subject to the graduation requirements in force during the year they were admitted. Nevertheless, if the curriculum was modified, the student can select to graduate under the new curriculum, but not by a combination of both.
8. Students readmitted after one year of absence, who need nine (9) credits or less to complete graduation requirements may select to graduate under the curriculum in force the year they were admitted.

Students must apply for graduation at the registrar's office during the period established in the academic calendar. 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.

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.

Universidad del Turabo may award two degrees to a student if these degrees are taken in different programs. Certifications will be granted if specialties of the same program are involved.

Course Validity

Credits earned through courses taken at Universidad del Turabo or at an accredited institution will be valid for a maximum of 7 years. After that period, the credits will lapse.

Doctoral Studies at UT

Graduate Studies and Research Center

Science and Technology Building
Office 1.2
787-743-7979 Ext. 4270
Fax 787- 743-7979 Ext. 4275
http://ut.suagm.edu/
E-mail ced@suagm.edu

Established in 2003, the Graduate Studies and Research Center (CEGI for its Spanish acronym) 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 CEGI also promotes scholarly research among students and faculty.

The CEGI is located in the Science and Technology Building and it is directed by the Associate Vice-Chancellor for Graduate Studies and Research. The Associate VC interacts with all the UT Schools and their respective Coordinators of Doctoral Programs. In this way, the CEGI and the Coordinators work together to ensure that all the doctoral students are well-attended and supported.

Mission

The CEGI 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 CEGI 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 Graduate Studies and Research Center is greatly concerned with 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 and Career Advising
- Professional development seminars
- Group study areas

- Doctoral resources study room
- Doctoral level bibliographical services
- Laptop loan program for doctoral students
- National and international conferences
- Science authors recognition program
- Doctoral studies council
- Doctoral fellowships and scholarships database
- Teaching Assistant and Research Assistant Programs

Ultimately, the Graduate Studies and Research Center 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.

Doctoral Programs General Admission Requirements

Students who wish to be admitted to the UT Doctoral Programs must meet the following requirements:

1. Hold a Master's degree or an equivalent degree from an accredited institution of higher education.
2. Submit official credit transcripts from all the institutions of higher learning that the student attended.
3. Upon invitation from the Coordinator of Graduate Studies, take part in an interview with a department representative or the admissions committee.
4. Submit the three recommendation forms included in the admission application.
5. Submit an essay on a topic selected by the School's Admissions Committee.
6. Submit an updated. résumé that reflects professional experiences and academic achievements.
7. Take a graduate admissions test offered by the Educational Testing Service, such as PAEG, EXADEP or GRE. Certain programs may require additional tests, such as GMAT in the Management and Information Systems doctoral programs. Test results are valid for five years.
8. Submit a $75.00 nonrefundable application fee.

Specific requirement of each program are available at the Schools' section.

Readmission

1. Students must apply for readmission if they interrupted their studies and did not attend the university for one full academic semester or longer.
2. Students must have a cumulative grade point average equivalent to the retention index.
3. All candidates for readmission may be subject to an interview with the Doctoral Committee of the School.
4. Students who request readmission to a UT Doctoral Program are subject to the current curriculum of the study program to which they have been admitted.

Transfer Students

Students from other accredited institutions must meet the following requirements for admission:

1. Transfer students must have completed 6 credits with a minimum 3.00 grade point average, at an accredited institution.
2. Must not have been subjected to any academic or disciplinary sanctions.
3. Must meet the admission requirements of the particular program and specialty to which they are applying.
4. Submit two official credit transcripts with admission application. Students who are transferring from a university outside Puerto Rico must submit a course catalog from the previous institution.
5. Transfer courses will not be considered for the retention index analysis.

Residence

To establish residence and be eligible for graduation, students who transfer to the graduate program must complete the following requirement:

Students must obtain at UT the number of credits equal to the difference between the total credits required by the Program minus the number of valid and approved transfer credits.

Student Categories

a. **Student in employment-related training**: Students who receive credit for courses which are not conducive to an academic degree
b. **Special Students**: Students who have not earned an academic degree and who need to receive credit for courses which are conducive to a degree.
c. **Transient Students**: Students registered at another institution of higher learning who are pursuing an academic degree and who must receive credit for courses. These students must obtain special permission from their institution to take courses at UT.
d. **Auditor Students**: Students who do not receive credit for their courses and who take such courses for professional or career development reasons.

All students who fall in the categories previously mentioned must meet the following requirements:

1. Obtain permission from their University to take courses at Universidad del Turabo.

2. Apply for admission within the period established by the Admissions Office.
3. Universidad del Turabo will admit students who fall under any of the previously mentioned categories. Students admitted, once registered, may attend courses at the institution in any of its modalities or programs. However, permission for registration under the categories mentioned above does not constitute formal admission to the university.
4. Permission to register at UT under these categories expires at the end of the course.
5. The Dean of the corresponding school must authorize these students' registration.
6. All these students must meet the requirements for the requested program of study, as well as other general admissions requirements.
7. All students who apply to UT under the previously mentioned categories may be invited to an interview with the School Admissions Committee.

International Students

Admission of International students will follow the established institutional guidelines and is subject to current immigration laws.

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

Admission Appeals

Applicant students can appeal the admission decision. The plea has to be written to the dean of the school. The Dean will contact the applicant student. The appeal should be made within 15 days after student's knowledge about the decision. A copy of the plea should be sent to the admission office.

Effective Dates

Admission and readmission at UT will be valid for one semester of the academic year, beginning on the date it is granted.

Application deadlines are determined by each School, since they are specific to each doctoral program. Admissions information requests and submission of required documents are processed by the Doctoral Studies Center.

All documentation and/or requests must be forwarded to:

UNIVERSIDAD DEL TURABO
ADMISSIONS OFFICE
PO BOX 3030
GURABO, PR 00778
(787) 743-7979 X 4270
utdoctorado@suagm.edu

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 of Universidad del Turabo. 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 checks, money orders, 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 Ana G. Méndez University System 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 and will be required to pay a $20.00 fee for each incomplete grade in order to have it removed from the record.

Adjustments and Refunds

Active students who request total withdrawal before 60% of the registration period had 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 12% 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 del Turabo makes every effort to help their students to obtain government financial aid. There are three types of categories of financial aid: fellowships, state funds and loans.

Fellowships

The University offers two types of graduate fellowships: Teaching Assistantships and Research Assistantships. They are awarded based on academic merit and the students' professional goals. In order to apply, students must complete a FAFSA application and contact the Doctoral Studies Center for a fellowship application.

State Funds

The Council of Higher Education of P.R. 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 by 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. The interest is variable but does not exceed 8.25 per-cent. The borrower should check the interest rate on their promissory note.

Financial Aid Application and Renewal

The deadline for application or renewal of financial aid for the academic year is May 2. Applications received after this date will be classified as late applications and will be processed as such after receiving the applications submitted on time. Late applications will be reviewed if funds are available. Students who have participated in 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 FAFSA form on the Web, in person at the Financial Aid Office or by mail at:

UNIVERSIDAD DEL TURABO
FINANCIAL AID OFFICE
P O BOX 3030
GURABO, PUERTO RICO 00778

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

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 del Turabo is a private, secular, non-profit institution, and is independent from 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 student's access to official records that are directly related to the students and 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 records, except to certain specified parties. (Parents and students must be notified of these rights transfer to students at certain points, and an office and review board has been designated at The Federal Office of Health, Education and Welfare to investigate and decide on complaints and violations of this law.)

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

Doctoral Degrees Academic Regulations

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. For registration to be official, the bursar must validate the student's program-receipt.
c. The official notification of admission is required to begin the enrollment process.
d. Students are required to register during the period specified in the calendar.

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 classroom of announced courses and to close or eliminate sections or courses from its academic offering.

Students Classification

Full-time regular students at the doctoral level are those who have registered for programs of no less than three (3) credit hours and are degree-seeking candidates. Half-time students are those with an academic workload of one (1) to two (2) credit hours and are degree-seeking candidates.

Academic Load

Academic load will not exceed nine (9) credits per term or summer session for Business Administration, Education and Environmental Sciences, fourteen (14) credits for Psychology and twenty one (21) for Naturopathic Medicine. An academic load of more than the one specified by the program will require prior approval by the dean of the graduate program.

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 to 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.

Evaluation of Academic Achievement

During each term, professors will evaluate their students based on a minimum of two evaluation components. At least one of the components should be a partial evaluation and the second must be a final evaluation element. The final deliberation regarding a student's evaluation will depend on the professor's academic judgment and evaluation methodology. The evaluation may consist of tests, projects, research papers, case studies, or any other relevant activities based on the nature of the course. Student evaluation methodology will vary according to the type of academic experience such as: courses, seminars, field experiences (laboratories, workshops, professional internships, practical training, etc.) and dissertation.

Students will be responsible for contacting their professors if they need to clarify issues regarding their evaluation. If a student has been absent for justified reasons, the professor has the authority to offer tests and/or other evaluation elements at a different date. Students are expected to complete all the required course work within the established course period. Otherwise, they will earn a zero grade for each evaluation element that was not completed during the course.

The professors are responsible of preparing and distribute the course outline and complete the academic calendar. Also, professors must provide the grade for at least one evaluation element before the withdrawal deadline.

Grading System

The final grade of theoretical courses and seminars will be evaluated using the SUAGM system of percent values:

100-90 = A
89-80 = B
79-70 = C
69-60 = D
59-0 = F

The cumulative grade point average (GPA) will be calculated according to the SUAGM grade numeric value systems:

A = 4.00
B = 3.00
C = 2.00
D = 1.00
F = 0.00

In special cases, the following SUAGM letter system will use and will not impact the students' GPA:

W - Official Withdrawal
I = Incomplete Work
IP = In progress
P = pass/approved
NP= no pass/not approved
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

Student claims regarding grades will be considered under the following circumstances:

1. Grade calculation errors, absence of grades and/or evaluation
2. Violation of institutional academic policies related to course evaluation (claims based on method of evaluation used by professor or on judgment of content will not be honored).
3. 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.
4. An instructor may change a previously assigned grade by processing an official Change of Grade Form in the Registrar's Office. The instructor must submit the form to the Dean of the Academic Division within the number of days of the course's period or term. The Dean of the Academic Division will submit the form to the Office of the Registrar, who will officially make the changes.
5. Any changes requested outside of the established submission period must be justified in writing and must be approved by the Dean of the Academic Division or his/her representative.
6. Special cases related to grade claims and changes will be resolved by a committee headed by the Vice Chancellor. Members of this include the Dean of the Academic Division, a professor, the Registrar and a student appointed by the Chancellor. The group meets at the beginning of each academic year.

Committee decisions will be final and obtained by majority of votes. The Vice Chancellor will authorize any change of grades.

Incomplete Grades (I)

a. Students who fail to take the final examination and have at least one partial grade will be given an incomplete grade.
b. Students must give the professor valid reasons for the absence from the final exam. It is the responsibility of the students to make the necessary arrangements with the Professor or Dean of the Academic Division to complete any final class requirements and/or take the final exam.
c. In order to remove the Incomplete, the student must take the final exam within thirty (30) days after the next semester has begun, or in accordance with the Academic Calendar.
d. The Incomplete (I) will be considered to evaluate a student's academic satisfactory progress at the end of the academic year. After the removal of the Incomplete (I) he or she can appeal the institutional decision about his/her academic standing. For financial aid to be awarded, the appeal must be made within the dates established by the Federal Government.

Course Repetition

Students may repeat a course in order to improve their GPA, since credit will be given for the higher grade. If the grade earned on the second attempt is the same as the first, only one (1) grade will be used to calculate the cumulative average.

a. Students who wish to repeat a course may do so. However, they must repeat all required courses for graduation where a D, F, W grade was earned, with the exception of students from Psychology that must repeat were a C was earned.
b. The institution will allow students who earned a C, D, F, W or 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 highest grade earned.
d. If the earned grade in a repeated course is the same as the previous grade, it will count for the cumulative average, but only once for the graduation GPA.
e. Regarding Student Practicum courses, the student will only have two opportunities to repeat the course, upon recommendation and approval of the dean of the program and the practicum supervisor.
f. Repeated courses will be considered to analyze a doctoral students' academic progress.

Comprehensive Exams

Each doctoral program requires the approval of a comprehensive examination to measure the student's academic achievement. In order to be eligible to take the comprehensive examination, students must have completed all the required courses, with the exception of dissertation courses. The doctoral program in Environmental Sciences requires that the student completes satisfactorily 50% of the courses in the academic program. Each School has provided guidelines or criteria for the exams.

1. Doctoral Program in Management and Management Information Systems (DBA)
    a. The comprehensive exam will have an oral (20%) and written (80%) components.
    b. A student must first complete the written component before attempting to take the oral.
    c. A minimum of 80% is required to approve the comprehensive exam.
    d. Students can register in dissertation courses only if they have successfully completed the comprehensive examination.
2. Doctoral Programs in Education (Ed.D.)
    a. The comprehensive exam will have a written component divided in two sections (social context and specialization).

b. A minimum of 80% approval in each section of the comprehensive exam will be required.
c. Students can register in dissertation courses only if they have successfully completed the comprehensive examination.

3. Doctoral Program in Environmental Science (Ph.D.)
   a. The comprehensive exam will have an oral and a written component.
   b. A student must first complete the written component of the examination successfully before attempting to take the oral section.
   c. A minimum of 80% approval in each component of the comprehensive exam will be required.
4. Doctoral Program in Psychology
   a. The comprehensive exam will have a written component.
   b. A minimum of 80% is required to approve the comprehensive exam.
   c. Students can register in dissertation courses only if they have successfully completed the comprehensive examination.
   d. Students can start the internship if they have successfully completed the comprehensive examination.

Comprehensive Exam Revision and Repetition

Students that are interested in a revision of the results of the comprehensive exam must do so in a written communication to the dean of the school within thirty (30) working days after receiving the results. The dean of the school in consultation with the coordinator of the program will revise the results. The dean will notify in written to the student the decision. If the student is not satisfied it can make a written request to the Vice-Chancellor of Academic Affairs.

Students who do not approve the Comprehensive Examination have the opportunity to retake the exam up to two times within a two-year period. If a student fails to successfully complete the exam after three opportunities within the stipulated period, then his/her case will be evaluated by the dean of the school. The Dean may take into consideration any of the following options:

1. Authorize or deny a student request to take the exam a fourth time.
2. Ask the student to repeat all courses which are considered necessary in order to approve the exam on a fourth attempt.
3. Notify the student that it cannot continue in the program.

Dissertation

General Criteria

a. Each student will have a Dissertation Committee composed of three to five members depending of the school and the majority of the members should be from UT or from the SUAGM. The committee will be Chair by a UT faculty. The external members should have the credentials in order to be part of a committee. Exception should be approved by the Dean of the School.
b. Each School Division has established a Dissertation Manual that defines processes, guidelines, style, and content considerations, according to the standards of the respective academic discipline. The format of the pages before the table of contents should follow the format provided by the Dissertation Manual from the CED, as well as the general guidance for margin, font, and pagination.
c. The Dissertation will be graded as:
   - P= Pass/approved
   - IP = In progress
   - NP = No pass/not approved
d. If a student does not complete his/her dissertation research within one academic session he/she must register for a dissertation course assigned to students who received IP grades.
e. Students can maintain their IP status for the amount of years established by the program but it should not exceed five (5) years.
f. Schools of assuring good quality and practices based on the standards of the discipline. All dissertations should be edited and revised based on the procedures establish by the schools.
g. If a student does not complete the dissertation within a five (5) year periods, he/she must submit a letter to the Dean of the School to request an extension. The petition must include a recommendation from the Dissertation Committee Chair.

Independent Study

Independent study coursework is offered as an alternative for students who need to take courses that are not offered during their graduation year or that are necessary for the academic development of the student. Students will be allowed to take up to two (2) independent courses.

Academic Progress

A. There will be three academic categories of students, based on student grades and the percentage of cumulative approved courses:

   - Students with outstanding academic progress
   - Students with satisfactory academic progress
   - Students on academic probation

B. Students with outstanding academic progress are those with 3.50 GPA.

C. Students with satisfactory academic progress are those with a GPA equal or above to the academic retention index and the percentage of approved credits.
D. Students who receive transfer credits will be evaluated at the end of the first year. Transfer courses will be considered as attempted credits and they will be included in the approved credits variable. However, they will not be included in the retention index analysis.
E. Students on academic probation are those with a GPA lower that the retention index and don't have the percentage of approved credits.

Academic Index

A. The cumulative GPA is a general average of all the courses taken at the University during a student's participation in the Doctoral Program.
B. Transfer courses which are equivalent to those required by the Program and are approved with a minimum grade of B will be considered for validation.

Retention Index

A. The retention index is the minimum cumulative GPA that is necessary to complete all the required courses in the academic degree program.
B. The retention index varies according to the total number of cumulative credit hours.

Graduation Index

A. The graduation index is considered to be the cumulative academic GPA from all the courses required by the academic degree program.
B. Students must earn a minimum 3.00 graduation index to earn their doctoral academic degree with the exception of Naturopathic Medicine which requires a 2.00 GPA.

Required Cumulative Credit Hours and Retention Index

A. The number of attempted cumulative credit hours is defined by the total sum of credit hours that a student is registered for during the academic year.
B. All doctoral students should earn a retention index based on the amount of credit hours that are required by their academic degree program, as specified in the Appendices.

Cumulative Attempted Credits and Retention Index.

A. Upon completion of the degree, all students must complete all graduation requirements within a time period that does not exceed 150% of the total time necessary to complete all the required credit hours in the degree program.
B. The total number of approved credit hours must meet the minimum graduation index.
C. Academic progress evaluation is determined by the credit hours percentage and the required academic index. All students will be evaluated in their academic year.
D. If a student meets the 150% of total credit hours required by the degree plan, he or she may continue to work under the corresponding academic category. However, the student will not be eligible for federal or state financial aid programs.

Academic Probation

The academic probation period is one (1) year. 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. Doctoral students, whose cumulative academic index is lower than the required retention index, will be suspended for a one (1) year period. The students may appeal their suspension decision.

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. If a student is subject to an additional academic sanction, he or she will be suspended permanently from the University. Under extraordinary conditions, the Academic Suspension Appeals Committee may approve an additional one (1) year probation period of one 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 head of household, natural disasters, divorce, death in the immediate family, family problems, legal circumstances, military license, serve a jury in a legal trial, work problems, accidental physical incapacity and justified changes in academic objectives which cause an impact on the student's academic progress.

Appeals Committee

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 Admissions and 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.

Leave of absence and Academic Dispensation

Any student can request an academic dispensation of the application of the rule of credits caducity and the time to complete the degree requesting a leave of absence. Leave of absence can have to be justified based on the following reasons: student sickness, physical incapacity, maternity and military service. The leave of absence is approved by the Dean of the School and the Dean of Doctoral Studies and is given for a maximum of 12 months. After exceeding 6 month, the license won't stop the payment of academic loan. After completing the license the student will return to its original academic conditions without requesting readmission. Students that do not returned at the end of the license will be reclassified as inactive and will have to request readmission.

Transfer Courses

In order to consider any transfer courses, students must be officially accepted to a doctoral program at the University. A maximum of 12 credits can be transferred and exception will be evaluated by the Dean of the School. Transfer courses will be evaluated by the Doctoral Committee of the corresponding program. Transfer Course Validation is conducted according to the equivalent courses offered at Universidad del Turabo. Only courses completed with a grade of B or higher will be considered for transfer validation. Courses considered for transfer validation must have been taken within a three (3) year period of the course validation request. If this is not the case, these courses will be evaluated by the Dean of the corresponding School. The Dean of the School will evaluate and certify transfer course validations based on catalog and official course description and in consultation with the faculty. The Office of the Registrar will inform students about the outcomes of the transfer course validation process. Courses from earned or completed doctoral programs will not be accepted for transfer course validation.

Course Substitution

The Dean of the corresponding School is authorized to evaluate substitute courses that have a similar academic content. Differences in credit hours will not be taken into consideration and will not affect the substitution process. However, in order to complete the total number of required credit hours, a student will need to take additional courses, upon recommendation of the Dean, to make up the difference in the total number of required graduation credit hours.

Graduation Requirements

All doctoral students must apply for graduation at the Office of the Registrar within the stated academic calendar deadlines and guidelines. Students must approve all courses and requirements for the degree, as established and approved by the corresponding School and by the University. Students must earn a minimum GPA of 3.00, with the exception of Naturopathic Medicine that requires a GPA of 2.00. Students from Business Administration and Education can approve up to two courses with C and students from Psychology have to approve courses with A or B. The graduation academic index will be calculated by taking into consideration approved and required courses only. All students are subject to policies and guidelines that were

valid during their first year at the University. As regards curriculum changes, students may choose a more recent curriculum that is valid at the time of graduation. Students cannot combine past and present curriculum requirements. Transfer students must complete at the University all required courses that were not approved as a result of the coursework transfer validation process. Official graduation statements or documents will not be released if a student has not met all financial obligations to the University. All readmitted students are subject to graduation requirements that are valid at the time of readmission.

Course Expiration

All approved courses will expire ten (10) years starting from the last semester the student was active, with the exception of Psychology that curses will expire after seven (7) years.

Granting of Doctoral Degree

Commencement exercises will be held once a year at the end of the second academic semester. Students who meet all the graduation requirements at the end of the first academic term or during a summer session will be able to apply for graduation and obtain their graduation certification from the Office of the Registrar prior to their graduation date. Students have to resolve any economical obligation with the institution prior of receiving any graduation certification and diploma.

STUDENT SERVICES

Universidad del Turabo 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 activities of promotion and recruitment activities. It coordinates and offers orientation activities to recruit students into the doctoral and graduate programs by means of integrated campaigns. The Office develops year-round activities of recruitment with key personnel of the schools.

The Admission and Financial Aid Office offers financial aid orientation, evaluates and processes admission requests, and admits students within the parameters established by each school. It also analyzes documentation and assigns state, federal and institutional funds, while maintaining communication with the student on the status of his/her request for admission and financial aids. Among others essential functions, the Office coordinates the process of interviews and admission of prospective students with the different schools. 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 the 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 name and address, and telephone number changes.

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 7:00 pm, Monday through Thursday, 8:00 to 5:00 pm on Fridays and from 9:00 to 12:00 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 federal 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 résumés 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 is 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.

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 del Turabo 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. Traffic tickets may be issued for traffic and parking violations. Student parking stickers are issued to each student upon registration. The cost of parking is $.35 for students and $1.00 for 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 students 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 and 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 these councils. 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 Turabón*** is published four times a year by students of the communication program. It serves as a medium for all institutional activities and as a practicum experience for the students.

Student Organizations

According to their interests, students may join religious, social service, and 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 actively participate actively in clubs and organizations.

Universidad del Turabo Choir

The Universidad del Turabo 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 del Turabo. 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 27 men's and women's varsity teams, which have won 102 champion and sub-championships since 1975. These triumphs include the record-setting achievement of winning the Intercollegiate Athletic League track and field championship 10 times since 1987. Universidad del Turabo athletes have also been champions in basketball, weight lifting, decathlon, heptathlon, cross-country, 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 "Taínos" with their orange, black, and white colors. The sports facilities include indoor basketball and volleyball courts, tennis courts, free weight and Hammer machines gym, a 400 meters track, swimming pool, baseball park, a jogging trail and wellness center.

Veterans' 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 repeated 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 student as of the last day of attendance to a class.

EDUCATIONAL RESOURCES

One of the most important features of Universidad del Turabo is the Academic Resources Center, under the Office of the Vice Chancellor of Information Resources. The center is dedicated exclusively to helping students and faculty share a variety of academic resources that support, complement and enrich the teaching and learning processes. The center is comprised of the following five areas:

Information Resource Center

The Information Resource Center provides library resources, audiovisual material, archives, computer programs, electronic information systems, microcomputers, fax machines, audio and recording studios, graphic arts workshops, audience halls, and a gallery.

Library Services

The Library Services Division provides the printed resources, electronic resources through the virtual library, audiovisual material, and technological systems that facilitate obtaining information. In order to train students in the effective use of the library services and resources, the division maintains a program of bibliographic instruction, given both in the classroom and in the library. Its reference services have the latest in information systems and a wide variety of reference books. Access to resources is gained through an online electronic catalog (OPAC) that allows subject searches in Spanish and English. This electronic catalog provides access to external resources at many institutions in Puerto Rico and the world, through the Internet.

The Center has access to other databases and various full-text databases such as: ProQuest, DIALOG, Books in Print, Literary Market Place, ULRICH, The Engineering Index, ERIC, Cambridge Index, Chemical Abstracts, and HAPI. Local databases available are CONUCO, PCIP, ITS and ADENDI.

Collections Development

The internal collection of Universidad del Turabo totals up to 140,000 volumes. This includes books, journals, documents, microfilms, recordings, films, maps, drafts, plates, photographs, transparencies, slides, models and objects. The Center's main objective is to develop collections that respond to academic needs, contribute to the humanistic education of the students, facilitate research and ratify accreditation.

Computer Resources

There are 115 computers for student and faculty use at various service points throughout the library. There are eleven computers in the Reference and Periodicals Service Area, two in the Circulation and Reserve Service Area and eight in the library lobby. In the Electronic Information Room (Open Access Computer Lab), there are 74 computers, and the Faculty Development Center has 20 computers available.

Educational Technology

The Educational Technology Division studies teaching methods, styles and strategies, so as to coordinate with the faculty in the creation of programs to improve curriculum, test new teaching methods and promote educational innovations. This division is also responsible for designing, producing and integrating into the curriculum didactic resources and materials that promote systematic improvement and innovation in university education. The integration of educational resources into the teaching-learning process is aimed at enabling faculty to attain their educational goals and the students to obtain a high level of academic achievement.

Distance Education

Distance Education is a special program component offered by Universidad del Turabo. Its main objective is to serve as a facilitating unit to support program offerings. It also supports educational and service programs that depend on one of the distance education modalities requiring the transfer of knowledge through the use of technology. At Universidad del Turabo, distance education focuses on four delivery modalities: web-based, web-supplemented, web-enhanced and Instructional Television Fixed Services (ITFS) A master's degree program in business administration is being offered online by the School of Business Administration. The School of Education is offering courses in education via television media (ITSF). For additional information, please contact the Admissions Office or academic schools.

Dr. Josefina Camacho De la Nuez Museum and Center For Humanistic Studies

The Museo y Centro de Estudios Humanísticos Dra. Josefina Camacho de la Nuez of the Universidad del Turabo has been a museum and center for the study of the humanities at the Universidad del Turabo 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 Candelero, 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.

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.

RESEARCH INSTITUTES

TELECOMMUNICATIONS INSTITUTE (IT+)

The Telecommunications and Information Resources Center specializes in the following research areas:

- Design of Convergence Networks
- Network Security Practices and Issues
- Verification, Validation and Certification of Software Products

The installations are divided among three laboratory facilities: the Telecommunications Technologies lab, the Operating Systems lab, and the Network Security lab. The main technologies available in these labs are as follows:

- IP Telephony and Digital Telephony
- Layer two and three switches
- Wireless Network
- Windows Servers
- HP-Unix Servers
- Linux Development Environment
- PABX Optic Fiber
- Cisco Routers
- Sun Microsystems Blade Servers
- Computers available: over 100
- Digital and Plasma projection facilities and equipment
- Conference Room
- Windows, Unix and Linux programming environments

PUERTO RICO ENERGY CENTER (PREC)

The Puerto Rico Energy Center will be 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 will provide 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 will 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

INTERDISCIPLINARY RESEARCH CENTER (I^3 for its Spanish acronym)

The goal of the Interdisciplinary Research Center is to establish research projects that transcend basic research in the basic sciences, environmental and biomedical sciences. The objectives of this Center are to:

- Foster internal interdisciplinary research projects to support the professional development of UT faculty
- Foster interdisciplinary research projects with external collaborators that are relevant to the UT vision and mission.
- Establish a high-quality research center that acts as a liaison between academic and research institutions in the United States and Latin America.

The I^3 Research Center is funded through federal and local research grants. In addition, the Center will sponsor conferences, workshops, educational trips, and consulting opportunities to supplement their grant funded income.

The Center will concentrate its efforts to establish partnership with federal agencies such as: NASA, NSF, and NIH, as well as, US EPA, NFWF, USGS, NOAA, and TNC.

Some examples of various interdisciplinary research projects with all the previously mentioned agencies are:

Las Cucharillas: Wetlands Management Project
Environmental Health and Toxicology Vieques Project
Disaster Prevention and Management
SIG and Environmental Informatics
Environmental Disasters Mitigation
Bridges to the Doctorate
Environmental Assessment Center in Cabo Rojo
Fellows Enhancing Science and Research
Environmental Education School Network
Asthma Prevention and Management
Justice, Education and Environmental Information Awareness Program
Professional Development Initiatives for Teachers
Environmental Professional Development Certification Institute

INTERNATIONAL CENTER OF ENVIRONMENTAL AND SUSTAINABLE DEVELOPMENT STUDIES (CIEMAD*e*S)

CIEMAD*e*S is an international R & D initiative involving Puerto Rico, the Dominican Republic and Haiti; its purpose is to address environmental and sustainable development issues in these three Caribbean countries. This collaboration is driven by the Caribbean area's insufficient environmental protection, increasing population density, territorial limitations, lack of social awareness regarding the environment, increasing and urgent economic developments, and the need to strengthen specialized government infrastructures.

Through CIEMAD*e*S, these three countries will be able to focus attention on regional issues, share experiences and available resources, and facilitate academic and scientific synergy-related activities. The following initial projects have been proposed to establish this international initiative:

- Host a regional conference to discuss environmental and sustainable development issues
- Develop a human resources (environment and sustainable development) expert's inventory
- Characterize environmental and sustainable development parameters
- Create a regional environmental resources database to be used as a baseline.
- Establish a post graduate scholarship program
- Develop a formal and informal environmental curriculum.

IMPORTANT NOTE:
This catalog contains the major points of the current agreements between the students and Universidad del Turabo. 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.

It is the student's responsibility to know and comply with the rules expressed herein, which coincide with current bylaws and regulations of the University, the administrative resolutions and the federal laws on civil rights.

OFF-CAMPUS CENTERS

BARCELONETA

Centro para la Excelencia de la Tecnología Avanzada (CETA)

Ramón E. Díaz, Director, radiaz@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

Juan A. Rosado Cardona, Director, ut_jrosado@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, PR

Phone: (787) 263-2177
Fax: (787) 263-0277

ISABELA

Carmen L. Rivera, Director, ut_crivera@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

YABUCOA

Glenda L. Bermúdez, Director, gbermudez@suagm.edu

Postal Address
PO Box 25
Yabucoa, PR 00767

Physical Address
Carr. PR 901, Km.1.4
Bo. Juan Martín, Yabucoa, 00767

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

Carlos E. Maldonado Piris, Director,
cmaldonado@suagm.edu

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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

PRINCIPAL CAMPUS

Dennis Alicea, Chancellor, ut_dalicea@suagm.edu

Postal Address
PO Box 3030, Gurabo, PR 00778-3030

Physical Address
State Road 189, Km.3.3
Gurabo, PR

Phone: (787) 743-7979
Fax: (787) 744-5394

TURABO UNIVERSIDAD DEL TURABO SISTEMA UNIVERSITARIO ANA G. MÉNDEZ

Academic Offerings 2015-2016

Masters Degree

Programs	Principal Campus	Off-Campus Centers: Barceloneta	Cayey	Isabela	Yabucoa	Ponce
Business and Entrepreneurship						
Accounting	x					
Computer Information Systems						
Finances	x					
Human Resources	x*		x	x		x
International Business with Focus on Latin America	x					
Management	x*					
Marketing	x*					
Materials Management Control	x*					
Project Management	x					
Quality Management	x					
Taxation	x					
Education						
Counseling	x					
Curriculum and Teaching	x					
Educational Administration	x					
Physical Education	x					
Primary School Teaching	x					
Special Education	x					
Teaching English as a Second Language	x			x		
Teaching of Fine Arts	x					
Engineering						
Administration of Telecommunications and Network Systems	x					
Computer Engineering	x					
Electric Engineering	x					
Mechanical Engineering: Aerospace	x					
Mechanical Engineering: Alternative Energy	x					
International School of Design and Arquitecture						
Architecture	x					
Health Sciences						
Nursing: Family Nurse Practitioner Specialty	x					
Speech-Language Pathology	x					
Natural Sciences and Technology						
Environmental Analysis	x					
Environmental Management	x					
Social Sciences and Communications						
Arts Administration	x					
Conflict Resolution	x					
Counseling Psychology	x	x				
Scholar Psychology	x					
Criminal Justice	x					x
Forensic Sciences	x	x		x		x
Human Services Administration	x					
Professional Studies						
Strategic Leadership and Management			x	x	x	x
Instructional Design and Tecnology Integration with eLearning			x	x	x	x

*Online program available

TURABO UNIVERSIDAD DEL TURABO SISTEMA UNIVERSITARIO ANA G. MÉNDEZ

Academic Offerings 2015-2016

Graduate Certificates

Programs	Principal Campus	Off-Campus Centers				
		Barceloneta	Cayey	Isabela	Yabucoa	Ponce
Accounting	x					
Computer Information Systems	x					
Counseling Psichology	x					
Criminal Justice	x					
Forensic Psychology	x					
Forensic Sciences	x					
Human Resources	x					
Human Services Administration	x					
Management	x					
Marketing	x					
Materials Management Control	x					
Network Security	x					
Nursing: Family Nurse Practitioner	x					
Project Management	x					
Quality Management	x					
Taxation	x					

TURABO UNIVERSIDAD DEL TURABO SISTEMA UNIVERSITARIO ANA G. MÉNDEZ

Academic Offerings 2015-2016

Doctoral Degrees

Programs	Principal Campus	Off-Campus Centers				
		Barceloneta	Cayey	Isabela	Yabucoa	Ponce
Business and Entrepreneurship						
Information Systems Management	x					
Management	x					
Education						
Educational Leadership	x					
Teaching, Curriculum and Learning Environment	x					
Health Sciences						
Naturopathic Medicine	x					
Natural Sciences and Technology						
Environmental Sciences	x					
Social Sciences and Communications						
Counseling Psychology	x	x				

SCHOOL OF BUSINESS AND ENTREPRENEURSHIP

UT's School of Business and Entrepreneurship is considered one of the largest and fastest growing in Puerto Rico with an enrollment of almost 4,000 students. Its academic offer ranges from certificates to doctoral studies. Programs that 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 regular faculty is integrated by 46 highly competitive members, 30 of which have doctoral degrees, 13 are in the process of completing one and 3 have a Master's degree.

In the interest and 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.

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
- 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

In April of 2011, the School of Business and Entrepreneurship has earned the specialized accreditation by the "Association to Advance Collegiate Schools of Business" (AACSB, International). The School position 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.

MISSION

"The Mission of the School of Business and Entrepreneurship at the Universidad del Turabo 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 into its business practices through education that is entrepreneurial in spirit, ethical in their approach and global in orientation. Excellence in teaching is enhanced by a faculty committed with professional development, intellectual contributions and service. As a professional school of business, we want to impact positively the society, organizations and the communities in 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.

STAFF

Juan C. Sosa / Dean
Litza Meléndez / Associate Dean

FACULTY

Luz N. Addarich-Vega / Associate Professor
MA, University of Puerto Rico

Brunilda Aponte / Associate Professor
PhD, Interamerican University of Puerto Rico

Juan J. Carrasquillo-González / Assistant Professor
MA, New York University

Sylvia Cardona-Colón / Assistant Professor
MBA, Interamerican University

Pablo A. Colón-Gruñeiro / Professor
MBA, University of Puerto Rico

José O. Cruz / Instructor
PhD(c), Universidad de León, Spain
MBA, University of Phoenix

Virgin Dones / Associate Professor
PhD, Interamerican University

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

Angel A. Fuentes-Valentín / Associate Professor
PhD, Carlos Albizu University

Carmen M. Marín-Figueroa / Professor
DBA, University of Sarasota

Eulalia Márquez-Martínez / Associate Professor
PhD, Carlos Albizu University

Litza Meléndez-Ramos / Instructor
MBA, University of Puerto Rico

Sandra Mena / Instructor
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MBA, University of Phoenix

Teresita Mulero-Mulero / Instructor
CPA, MBA, Universidad del Turabo

Maribel Ortiz-Soto / Associate Professor
PhD, University of Puerto Rico

Alia E. Pérez-González / Emeritus Professor
PhD, Fordham University

Luz M. Ríos-Negrón / Associate Professor
MBA, Universidad del Turabo

Marcelino Rivera-López / Professor
EdD, Interamerican University

Francisco J. Rivera-Pérez / Associate Professor
EdD (c), Interamerican University

Isabel Rivera-Ruiz / Professor
PhD, Argosy University

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

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Ph(c), Autonomous University of Barcelona

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

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

Juan Carlos Sosa / Associate Professor
PhD, University of Puerto Rico

Carmen Vargas-Segarra / Professor
EdD, Nova University

María Zayas-Ortiz / Professor
PhD, Interamerican University

The Graduate Program in Business Administration is an evening and weekend program; one way the program is offered is through a distance learning modality using the Internet. The other way is through a traditional personal contact approach. Both programs are designed for professionals who hold leadership positions in the private and public sectors and want to extend their formal academic training. It is also open to those candidates who have finished undergraduate degrees in fields other than business administration, and want to redefine their careers by pursuing a Master's degree in Business Administration (MBA) to improve their job opportunities.

The broad range of academic and professional backgrounds of our graduate student population creates an enriching learning environment. A homogeneous conceptual academic base is accomplished through a common core

curriculum component, required for all graduate students. This MBA curriculum content reflects a combined input from the faculty, the administration, and executives from corporate and public community. In addition, this business graduate program is intended to meet the business demands for MBA's from the community at large.

MBA PROGRAM GOALS AND OBJECTIVES

The Graduate Program, in both the traditional and the online distance learning modality, seeks to create a new breed of managers with the skills and understanding required to compete in a dynamic and global marketplace. Analytical skills are emphasized within the institutional study of the changing corporate structure found in the Puerto Rican and the U.S. economy. This supply of managers is created by incorporating the needs for training shown by different productive sectors of the economy, including the public sector.

To attain this goal, the objectives of the program may be summarized as follows:

- To provide students with the technical skills and the understanding of the socio-economic institutional framework within which businesses operate, enabling them to perform the responsibilities of leaders in executive positions.
- To improve and develop the technical skills required by persons currently holding positions in business administration.
- To keep the MBA curriculum content relevant in order to satisfy the needs for human capital training in business administration in the public and private sectors.

MBA CURRICULUM

The curriculum helps students with technical and managerial skills needed to effectively manage human resources, raw materials, financial resources, and working time in a global marketplace that is increasingly competitive.

The MBA program has two basic components: the core courses and the specialization courses. The strong core component requires 21 credits. The areas of specialization are: Accounting, Taxes, Materials Management, Marketing, Management, Quality Management, Project Management, Information Systems and Human Resources Management. Twelve (12) credits are required to partially complete the specialization component. In addition, students must take 3 elective credits and a Research Seminar (3 credits), in which a research project is developed.

In the MBA Online Program the students must take 3 elective credits and choose between a Specialty Test and an Integration of Knowledge Course (Capstone Course). A total of 39 credits are required for the MBA Online Program in any of the areas of specialization.

MASTER'S DEGREES

Management

The specialty in management allows the student to explore theoretical and practical elements of modern management, as well as changes in this field. Another objective of this concentration is to prepare the student for different key administrative tasks in commercial and industrials companies.

Total Credits	**42**
Core Requirements	**21**
Specific Specialization Requirements	**6**
Additional Specialization Requirements	**12**
Degree Requirement	**3**

Core Requirements Credits		**(21 credits)**
ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements		**(6 credits)**
HURM 710	Human Resources Management	3
HURM 715	Advanced Supervision	3

Additional Specialization Requirements Management		**(12 credits)**
MANA 511	International Management	3
HURM 719	Leadership	3
MANA 705	Production and Operations Management	3
HURM 732	Occupational Health and Safety	3
MANA 720	Advanced Production Management	3
MANA 625	Total Quality Management	3

Entrepreneurial		**(12 credits)**
ENTR 600	Identification and Evaluation of Entrepreneurial	3
ENTR 601	E-Commerce	3
ENTR 602	The Business Plan	3
ENTR 603	Organizational Structure and Design for SMEs	3

Degree Requirement		**(3 credits)**
(Select one from this group)		
MANA 736*	Management Seminar	3
MANA 742*	Simulation	3

*One semester course

Graduate Certificate in Management

Total Credits	**21**
Specific Specialization Requirements	**6**
Additional Specialization Requirements	**12**
Degree Requirement	**3**

Specific Specialization Requirements		**(6 credits)**
HURM 710	Human Resources Management	3
HURM 715	Advanced Supervision	3

Specialization option		
Management		**(12 credits)**
MANA 511	International Management	3
HURM 719	Leadership	3
MANA 705	Production and Operations Management	3
HURM 732	Occupational Health and Safety	3
MANA 720	Advanced Production Management	3
MANA 625	Total Quality Management	3
or		
Entrepreneurial		**(12 credits)**
ENTR 600	Identification and Evaluation of Entrepreneurial	3
ENTR 601	E-Commerce	3
ENTR 602	The Business Plan	3
ENTR 603	Organizational Structure and Design for SMEs	3

Degree Requirement		**(3 credits)**
(Select one from this group)		
MANA 736*	Management Seminar	3
MANA 742*	Simulation	3

*One semester course

Accounting

The accounting specialty offers students the skills, mechanisms, and methods of analysis that the administrator needs to apply and process accounting data of in the planning, operation and control of business activities.

Total Credits	**39-42**
Core Requirements	**21**
Specific Specialization Requirements	**6**
Additional Specialization Requirements	**9-12**
Degree Requirement	**3**

Core Requirements Credits		**(21 credits)**
ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements		**(6 credits)**
ACCO 702	Financial Accounting Theory	3
ACCO 706	Advanced Auditing	3

Additional Specialization Requirements		**(9-12 credits)**
Accounting		**(9 credits)**
ACCO 709	Budgeting	3
ACCO 710	Governmental Accounting	3
ACCO 711	Forensic Accounting	3
International Accounting		**(12 credits)**
ACCO 712	International Accounting	3
ACCO 713	International Financial Markets	3
ACCO 714	International Banking	3
FINA 611	International Finances	3

Degree Requirement		**(3 credits)**
(Select one from this group)		
ACCO 721*	Accounting Management	3
MANA 742*	Simulation	3

*One semester course

Graduate Certificate in Accounting

Total Credits	**18-21**
Specific Specialization Requirements	**6**
Additional Specialization Requirements	**9-12**
Degree Requirement	**3**

Specific Specialization Requirements		**(6 credits)**
ACCO 702	Financial Accounting Theory	3
ACCO 706	Advanced Auditing	3

Additional Specialization Requirements		**(9-12 credits)**
Accounting		**(9 credits)**
ACCO 709	Budgeting	3
ACCO 710	Governmental Accounting	3
ACCO 711	Forensic Accounting	3
or		
International Accounting		**(12 credits)**
ACCO 712	International Accounting	3
ACCO 713	International Financial Markets	3
ACCO 714	International Banking	3
FINA 611	International Finances	3

Degree Requirement		**(3 credits)**
(Select one from this group)		
ACCO 721*	Accounting Management	3

MANA 742*	Simulation	3

*One semester course

Human Resources Management

This specialty presents students with the most accepted practices by modern associates in the management of human resources and its function as a strategic element in the firm.

Total Credits	**39**
Core Requirements	**21**
Specific Specialization Requirements	**6**
Additional Specialization Requirements	**6**
Degree Requirement	**3**
Elective Course	**3**

Core Requirements		**(21 credits)**
ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements		**(9 credits)**
HURM 710	Human Resources Management	3
HURM 715	Advanced Supervision	3
HURM 725	Labor Law	3

Additional Specialization Requirements		**(6 credits)**
(Selected from this group)		
HURM 714	Training: Planning and Direction	3
HURM 716	Personnel Recruitment and Selection	3
HURM 719	Leadership	3
HURM 720	Performance Evaluation	3
HURM 730	Compensation System & Benefits Management	3
HURM 732	Occupational Health and Safety	3
MANA 640	Collective Bargaining	3

Degree Requirement		**(3 credits)**
(Select from this group)		
HURM 735*	Seminar in Human Resources Management	3
MANA 742*	Simulation	3

*One semester course

Elective Course	**(3 credits)**

Graduate Certificate in Human Resources

Total Credits	**18**
Specific Specialization Requirements	**6**
Additional Specialization Requirements	**6**
Degree Requirement	**3**

Specific Specialization Requirements		**(6 credits)**
(Selected from this group)		
HURM 710	Human Resources Management	3
HURM 715	Advanced Supervision	3
HURM 725	Labor Law	3

Additional Specialization Requirements		**(6 credits)**
(Selected from this group)		
HURM 714	Training: Planning and Direction	3
HURM 716	Personnel Recruitment and Selection	3
HURM 719	Leadership	3
HURM 720	Performance Evaluation	3
HURM 730	Compensation System & Benefits Management	3
HURM 732	Occupational Health and Safety	3
MANA 640	Collective Bargaining	3

Degree Requirement		**(3 credits)**
(Select from this group)		
HURM 735*	Seminar in Human Resources Management	3
MANA 742*	Simulation	3

*One semester course

Taxation

The broad curriculum of this specialty provides the student with an exposure to the most accepted practices in the tax system of Puerto Rico and the United States. This specialty is committed to offer reconciliation between theory and practice for the common benefit of the firm and society.

Total Credits	**39**
Core Requirements	**21**
Specific Specialization Requirements	**9**
Additional Specialization Requirements	**6**
Degree Requirement	**3**

Core Requirements		**(21 credits)**
ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements		**(9 credits)**
ACCO 705	Income Tax in Puerto Rico	3

ACCO 707	Federal Income Tax	3
ACCO 745	Corporate Income Tax	3

Additional Specialization Requirements (6 credits)
(Select two from this group)

ACCO 746	Income Tax, Society and Individual Corporations	3
ACCO 747	Income Tax for Non-profit Organizations	3
ACCO 748	Corporative Reorganizations	3
ACCO 749	Income Tax Planning Seminar	3

Degree Requirement (3 credits)
(Select one from this group)

ACCO 750*	Taxes Seminar	3
MANA 742*	Simulation	3

*One semester course

Graduate Certificate in Taxation

Total Credits	**21**
Specific Specialization Requirements	**9**
Additional Specialization Requirements	**6**
Degree Requirement	**3**
Elective Course	**3**

Specific Specialization Requirements (9 credits)

ACCO 705	Income Tax in Puerto Rico	3
ACCO 707	Federal Income Tax	3
ACCO 745	Corporate Income Tax	3

Additional Specialization Requirements (6 credits)
(Select two from this group)

ACCO 746	Income Tax, Society and Individual Corporations	3
ACCO 747	Income Tax for Non-profit Organizations	3
ACCO 748	Corporative Reorganizations	3
ACCO 749	Income Tax Planning Seminar	3

Degree Requirement (3 credits)
(Select one from this group)

ACCO 750*	Taxes Seminar	3
MANA 742*	Simulation	3

*One semester course

Elective Course (3 credits)

Quality Management

The curriculum of this specialty provides the student with an exposure to the different theoretical currents and practices in the quality management. This specialty is committed to the development of the capacity to reconcile theory and practice for the benefit of the organization and of society in general. The student will be prepared to work in different manufacturing and service industries in functions related to quality management.

Total Credits	**42**
Core Requirements	**21**
Specific Specialization Requirements	**9**
Additional Specialization Requirements	**6**
Degree Requirement	**3**
Elective Course	**3**

Core Requirements Credits (21 credits)

ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements (9 credits)

MANA 609	Quality Management	3
MANA 625	Total Quality Management	3
QUMA 655	Quality Statistics	3

Additional Specialization Requirements (6 credits)
(Select two from this group)

HURM 715	Advanced Supervision	3
QUMA 600	Six Sigma	3
QUMA 626	Teamwork Development	3
QUMA 727	Principles of International Quality Standards (ISO)	3
QUMA 728	Total Quality in Human Resources	3
QUMA 729	Re-Engineering	3

Degree Requirement (3 credits)
(Select two from this group)

QUMA 733*	Quality Management Seminar	3
MANA 742*	Simulation	3

*One semester course

Elective Course (3 credits)
(Select one from this group)

ACCO 500	Financial Accounting	3
INBU 500	Doing Business in Europe	3
ACCO 510	Sustainable Accounting and Finance	3
MANA 502	Environmental Management	3

Graduate Certificate in Quality Management

Total Credits	**21**
Specific Specialization Requirements	**9**
Additional Specialization Requirements	**6**
Degree Requirement	**3**
Elective Course	**3**

Specific Specialization Requirements		**(9 credits)**
MANA 609	Quality Management	3
MANA 625	Total Quality Management	3
QUMA 655	Quality Statistics	3

Additional Specialization Requirements		**(6 credits)**
(Select two from this group)		
HURM 715	Advanced Supervision	3
QUMA 600	Six Sigma	3
QUMA 626	Teamwork Development	3
QUMA 727	Principles of International Quality Standards (ISO)	3
QUMA 728	Total Quality in Human Resources	3
QUMA 729	Re-Engineering	3

Degree Requirement		**(3 credits)**
(Select two from this group)		
QUMA 733*	Quality Management Seminar	3
MANA 742*	Simulation	3

*One semester course

Elective Course **(3 credits)**

Information Systems

This specialty provides a broad curriculum in the last technological innovations and aims to develop a level of competence in the use of emerging applications in the field of information systems. This specialty is committed to the development of the capacity to become an effective agent of change for the benefit of the organization involved and as well as the society in general.

Total Credits	**45**
Core Requirements	**21**
Specific Specialization Requirements	**18**
Specialization Electives	**6**

Core Requirements		**(21 credits)**
ACCO 500	Financial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MAIS 525	Information Technology in Business	3
MANA 705	Production and Operations Management	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements		**(18 credits)**
MAIS 605	Application Development Technology	3
MAIS 615	Systems Analysis and Design	3
MAIS 625	Object-Oriented Programming	3
MAIS 635	Database Management	3
MAIS 645	Business Data Communications & Networks	3
MAIS 655	E-Commerce Technology	3

Specialization Electives **(6 credits)**
(Select two from this group)
(These courses require a project development)

Information Technology		
MAIS 704	Information Technology: Management and Policy	3
MAIS 708*	Information Technology: Project Management	3
Databases		
MAIS 734	Database Object-Oriented Applications	3
MAIS 738*	Data Warehousing Management	3
Telecommunications and Computer Networks		
MAIS 744	Optical Networks for Data Communications	3
MAIS 748*	Mobile and Wireless Data Communications	3

* One semester course.

Marketing

This specialty provides the student the necessary skills, theory, and modern practices of the trade element within organizations. In addition, the specialty promotes technical competence and the development of the ability to make market investigations, marketing planning, sales forecasts, and promotion campaigns.

Total Credits	**45**
Core Requirements	**21**
Specific Specialization Requirements	**12**
Additional Specialization Requirements	**9**
Degree Requirement	**3**

Core Requirements		**(21 credits)**
ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MARK 511	Marketing Management	3
MARK 703	Marketing Research	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements		**(12 credits)**
MARK 610	Advanced Marketing Management	3
MARK 708	Consumer Behavior	3
MARK 709	Distribution Channels	3
MARK 711	International Marketing	3

Additional Specialization Requirements **(9 credits)**
(Select one of the options)

Marketing Business to Business		
MARK 713	New Products Management	3
MARK 716	Marketing Business to Business	3
MARK 718	Logistics	3
Services Marketing		
MARK 715	Services Marketing I	3
MARK 720	Services Marketing II	3

MARK 725	E-Marketing	3

People's Marketing

MARK 730	Sport Marketing	3
MARK 735	Special Event	3
MARK 745	Political Marketing	3

Green Marketing

MANA 502	Environmental Management	3
MARK 690	Green Marketing	3
MARK 695	Sustainable Development	3

Degree Requirement **(3 credits)**

MARK 740*	Marketing Seminar	3
MANA 742*	Simulation	3

*One semester course.

Graduate Certificate in Marketing

Total Credits	**24**
Specific Specialization Requirements	**12**
Additional Specialization Requirements	**9**
Degree Requirement	**3**

Specific Specialization Requirements **(12 credits)**

MARK 610	Advanced Marketing Management	3
MARK 708	Consumer Behavior	3
MARK 709	Distribution Channels	3
MARK 711	International Marketing	3

Additional Specialization Requirements **(9 credits)**

(Select one of the options)

Marketing Business to Business

MARK 713	New Products Management	3
MARK 716	Marketing Business to Business	3
MARK 718	Logistics	3

Services Marketing

MARK 715	Services Marketing I	3
MARK 720	Services Marketing II	3
MARK 725	E-Marketing	3

People's Marketing

MARK 730	Sport Marketing	3
MARK 735	Special Event	3
MARK 745	Political Marketing	3

Green Marketing

MANA 502	Environmental Management	3
MARK 690	Green Marketing	3
MARK 695	Sustainable Development	3

Degree Requirement **(3 credits)**

MARK 740*	Marketing Seminar	3
MANA 742*	Simulation	3

*One semester course.

Materials Management and Control

This specialty provides to the student the necessary knowledge to work with management of materials and its different functions such as planning of production facilities, purchasing of materials, control of production, and inventory.

Total Credits	**39**
Core Requirements	**21**
Specific Specialization Requirements	**6**
Additional Specialization Requirements	**6**
Degree Requirement	**3**
Elective Course	**3**

Core Requirements Credits **(21 credits)**

ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements **(6 credits)**

MANA 603	Materials Management	3
MANA 705	Production Management	3

Additional Specialization Requirements **(6 credits)**

(Select two from this group)

MANA 606	Purchasing Management	3
MANA 609	Quality Control Management	3
MANA 701	Inventory Control Management	3
MANA 711	Manufacturing Systems and Techniques	3
MANA 713	Management of New Products	3
MANA 720	Advanced Production Management	3
MANA 721	Planning of Production Facilities	3

Graduation Requirement **(3 credits)**

(Select one from this group.)

MANA 717*	Materials Management Seminar	3
MANA 742*	Simulation	3

*One semester course

Elective Course **(3 credits)**

(Select one from this group.)

ACCO 500	Financial Accounting	3
INBU 500	Doing Business in Europe	3
ACCO 510	Sustainable Accounting and Finance	3
MANA 502	Environmental Management	3

Graduate Certificate in Materials Management and Control

Total Credits	**18**
Specific Specialization Requirements	**6**
Additional Specialization Requirements	**6**
Degree Requirement	**3**
Elective Course	**3**

Specific Specialization Requirements (6 credits)

MANA 603	Materials Management	3
MANA 705	Production Management	3

Additional Specialization Requirements (6 credits)

(Select two from this group)

MANA 606	Purchasing Management	3
MANA 609	Quality Control Management	3
MANA 701	Inventory Control Management	3
MANA 711	Manufacturing Systems and Techniques	3
MANA 713	Management of New Products	3
MANA 720	Advanced Production Management	3

Graduation Requirement (3 credits)

(Select one from this group.)

MANA 736*	Management Seminar	3
MANA 742*	Simulation	3

*One semester course

Elective Course (3 credits)

Project Management

Specializing in project management will provide the student the knowledge and technical skills of the conceptual framework of project management. Offer the same educational opportunities to develop the skills of critical analysis in research in their area of specialty. It will develop the practical skills of the student in carrying out projects on the organizational stage management and will establish the importance of ethical professional conduct through courses so that students valued the same within their professional development.

Total Credits	**45**
Core Requirements	**21**
Specific Specialization Requirements	**18**
Degree Requirements	**3**

Core Requirements (21 credits)

ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements (18 credits)

MANA 722	Fundamentals in Project Management	3
MANA 724	Project Management in Human Resources	3
MANA 726	Strategic Planning in Project Management	3
MANA 728	Project Quality Management	3
MANA 729	Risk Management in Projects	3
MANA 730	Project Cost and Procurement Management	3

Degree Requirement (3 credits)

(Select one from this group)

MANA 739*	Project Management Seminar	3
MANA 742*	Simulation	3

*One semester course.

Elective Course (3 credits)

(Select one from this group)

ACCO 500	Financial Accounting	3
INBU 500	Doing Business in Europe	3
ACCO 510	Sustainable Accounting and Finance	3
MANA 502	Environmental Management	3

Graduate Certificate in Project Management

Total Credits	**24**
Specific Specialization Requirements	**18**
Degree Requirements	**3**

Specific Specialization Requirements (18 credits)

MANA 722	Fundamentals in Project Management	3
MANA 724	Project Management in Human Resources	3
MANA 726	Strategic Planning in Project Management	3
MANA 728	Project Quality Management	3
MANA 729	Risk Management in Projects	3
MANA 730	Project Cost and Procurement Management	3

Degree Requirement (3 credits)

(Select one from this group)

MANA 739*	Project Management Seminar	3

*One semester course.

Elective Course (3 credits)

International Business with focus on Latin America

The program is a major in International Business Master of Business Administration. It consists of 48 credits distributed as follows:

a) Core Courses: 21 credits
This specialty, like all of the Graduate Program will have 21 core credits including a Research Methods course.

b) Specialty Courses: 24 credits in the area of International Business.
The specialty requires 24 credits in the International Business area divided into 18 credits of required courses and 6 credits of electives of specialty.

c) Seminar / Business International Studies: 3 credits.

The specialty will require students to develop an applied research project in the area of International Business that demonstrates the integration of acquired knowledge (applied research), international business studies abroad (travel program) or a specialty examination.

Total Credits	**48**
Core Requirements	**21**
Specific Specialization Requirements	**18**
Specialization Electives	**6**
Degree Requirement	**3**

Core Requirements		**(21 credits)**
ACCO 501	Management Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements		**(18 credits)**
INBU 610	International Business Environment	3
INBU 709	International Businesses in Latin America and the Caribbean	3
INBU 710	Legal Environment of International Business	3
MANA 511	International Management	3
MARK 711	International Marketing	3
INBU 715	Managing Global Production	3

Specialization Electives		**(6 credits)**
(Select two courses)		
FINA 611	International Finance	3
INBU 711	Exports and Imports	3
INBU 712	Contemporary Issues in International Business	3
ACCO 613	International Accounting	3
MANA 612	International Strategic Management	3

Degree Requirement		**(3 credits)**
(Select one course)		
INBU 716	International Business Seminar	3
INBU 720	International Business Studies	3
MANA 742	Simulation	3

Finance

The program will provide students with theoretical and practical concepts of management and in particular entrepreneurial management with a strong emphasis on finance based on global and regional case studies and contexts. It will prepare students for roles in financial risk management and in addition provides a choice of corporate finance study, all with a global perspective. The emphasis is on developing a sound working knowledge of core disciplines and the analytical financial skills necessary to understand and direct the work of others, and to develop a finance operational specialist in cross commercial or entrepreneurial settings.

Program Mission:
The program will provide students with theoretical and practical concepts of management and in particular entrepreneurial management with a strong emphasis on finance based on global and regional case studies and contexts. This MBA in Finance, in general orientation, will prepare students for roles in financial risk management and in addition provides a choice of corporate finance study, all with a global perspective. Emphasis is given on developing a sound working knowledge of core disciplines and the analytical financial skills necessary to understand and direct the work of other functional and operational specialists in cross commercial or entrepreneurial settings.

Program Objectives:
Graduates of this program will be able to:

- Serve the advanced management needs of local, national and global enterprises.
- Produce knowledge and competencies for operational and strategic perspectives in accordance with new social and business trends.
- Acquire a sound working knowledge of the core disciplines of business supplemented by an in-depth study of the latest financial tools and techniques.

- Apply the conceptual frameworks and skills of critical analysis applicable to entrepreneurial operations in a global economy.
- Understand and apply financial concepts to a global and local context and within in a business environment, with emphasis in (Small and Medium Enterprises) SMEs and non-profit organizations.

Core Requirements		**(21 credits)**
ACCO 501	Management Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements		**(6 credits)**
FINA 702	Corporate Finance	3
FINA 706	Investments and Financial Markets	3

Specialization Electives		**(6 credits)**
FINA 704	Entrepreneurial Finance	3
FINA 705	Options, Futures, and Other Derivate Markets	3
FINA 707	Risk Management in Financial Institutions	3
FINA 708	Finance in Public, SMEs and Non Profit Organizations	3
FINA 709	Global Corporate Finance and Sustainability	3
FINA 715	International Finance	3
FINA 716	Money, Banking and Investment Markets	3
FINA 717	Advance Investment Knowledge	3

Degree Requirement		**(3 credits)**
(Select one course)		
FINA 721*	Advanced Finance Seminar	3
MANA 742*	Simulation	3

Elective Course **(3 credits)**

*One semester course

Elective courses can be selected from this group:

ACCO 500	Financial Accounting	3
MATH 505	Quantitative Methods for Decision Making at Risk	3

ONLINE MASTER'S DEGREE

Human Resources Management

Total Credits	**39**
Core Requirements	**21**
Specific Specialization Requirements	**15**
Degree Requirement	**3**

Core Requirements		**(21 credits)**
ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements		**(15 credits)**
HURM 710	Human Resources Management	3
HURM 725	Labor Law	3
HURM 730	Compensation System and Benefits Management	3
HURM 732	Occupational Health and Safety	3
(Select one from this group)		
HURM 714	Training: Planning and Direction	3
MANA 640	Collective Bargaining	3
HURM 715	Advanced Supervision	3

Degree Requirement		**(3 credits)**
(Select one from this group)		
HURM 727	Course for the Specialty Test Human Resources	3
HURM 738	Knowledge Integration in Human Resources	3
HURM 735	Human Resources Seminar	3

Management

Total Credits	**39**
Core Requirements	**21**
Specific Specialization Requirements	**15**
Degree Requirement	**3**

Core Requirements		**(21 credits)**
ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements		**(15 credits)**
HURM 710	Human Resources Management	3

HURM 725	Labor Law	3
MANA 705	Production and Operations Management	3
HURM 715	Supervision and Leadership	3

(Select one from this group)

HURM 732	Occupational Health and Safety	3
MANA 625	Total Quality Management	3
MANA 640	Collective Bargaining	3

Degree Requirement (3 credits)

(Select one from this group)

MANA 736	Management Seminar	3
MANA 737	Concentration Test Management	3
MANA 738	Knowledge Integration in Management	3

Materials Management and Control

Total Credits	**39**
Core Requirements	**21**
Specific Specialization Requirements	**15**
Degree Requirement	**3**

Core Requirements (21 credits)

ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements (15 credits)

MANA 603	Materials Management	3
MANA 701	Inventory Control Management	3
MANA 705	Production and Operations Management	3
MANA 720	Advanced Production Management	3

(Select one from this group)

MANA 606	Purchasing Management	3
MANA 609	Quality Control Management	3

Degree Requirement (3 credits)

(Select one from this group)

MANA 717	Materials Seminar	3
MANA 719	Knowledge Integration in Materials Management and Control	3
MANA 727	Concentration Test Materials	3

Marketing

Total Credits	**39**
Core Requirements	**21**
Specific Specialization Requirements	**15**
Degree Requirement	**3**

Core Requirements (21 credits)

ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specific Specialization Requirements (15 credits)

MARK 610	Advanced Marketing Management	3
MARK 615	Advertising and Promotion	3
MARK 616	Public Relations	3
MARK 708	Consumer Behavior	3

(Select one from this group)

MARK 711	International Marketing	3

Degree Requirements (3 credits)

(Selected from this group)

MARK 737	Concentration Test in Marketing	3
MARK 738	Knowledge Integration in Marketing	3
MARK 740	Marketing Seminar	3

DOCTORAL PROGRAM, DBA

The Doctoral Degree in Business Administration (DBA) has been designed to provide students with the analytical, technical and managerial skills required in a changing and competitive global marketplace. There is also a strong research component that will enable students to investigate, analyze, and obtain the necessary expertise to excel in today's business world as well as promote change. Analytical skills are emphasized.

This DBA Program will incorporate the new trends in information technology, which will allow faculty and students to incorporate research activities as well as to apply the acquired knowledge.

Program Objectives

The overall objective of the DBA Graduate Program is to provide a high-quality doctoral program, and to improve and refine advance skills required by persons currently holding professional positions in business administration, such as faculty or other managerial personnel. The program will also motivate students to conduct activities related to research and product development, as well as services and new economic activities.

The specific objectives of the program may be summarized as follows:

- Stimulate theoretical and applied research that will result in the improvement of services to the institution and the community at large, while maintaining the institution's emphasis on quality learning and teaching.
- Develop competent professionals at the graduate level who will satisfy the business faculty needs at university level in Puerto Rico
- Promote the use of technology and non-traditional educational delivery systems.
- Establish partnerships between the University and the external community, by promoting research, cultural and community development projects that will enhance the quality of life.

DOCTORAL DEGREES

Management

Total	**60**
Core Courses	**15**
Specialization Required Courses	**18**
Specialization Elective Courses*	**9**
Research Course	**18**

Core Courses		**(15 credits)**
ECON 760	Economic Analysis	3
MANA 750	Advanced Statistical Methods	3
MANA 754	Business Research Methods	3
MANA 762	Management Science	3
MANA 764	International Businesses Management	3

Specialization Required Courses		**(18 credits)**
MANA 835	IT Policy and Strategy	3
MANA 800	Business Data Analysis	3
MANA 802	Corporate Finance	3
MANA 804	Strategic Management	3
MANA 806	Organizational Design	3
MANA 808	Business Consulting	3

Specialization Elective Courses*		**(9 credits)**
(select three from this group)		
MANA 810	Negotiation Strategies	3
MANA 820	Management of Innovations and Technology	3
MANA 822	Project Management in Business	3
MANA 824	Risk Management	3
MANA 830	Advanced Human Resources Management	3
MANA 832	Training and Human Resources Management	3
MANA 834	Seminar in Leadership	3
MANA 840	Management in the Service Industry	3
MANA 842	Entrepreneurship Management	3
MANA 844	Managing Professional Service Organizations	3
MANA 850	Strategic Planning in Public Organizations	3
MANA 852	Project Planning and Programming	3
MANA 854	Management and Budgeting in Government	3
MAIS 857	Special Topics Business Intelligence	3
MANA 858	Environmental Management	3

Research Courses*		**(18 credits)**
RESM 862	Seminar in Management I*	3
RESM 864	Seminar in Management II*	3
RESM 866	Dissertation I	6
RESM 867	Continuation Dissertation I**	0
RESM 868	Dissertation II	6
RESM 869	Continuation Dissertation II**	0

*Enrollment in elective courses and research seminars requires advisor approval.
**Optional course three contact hours.

Information Systems Management

Total	**60**
Core Courses	**18**
Specialization Required Courses	**21**
Specialization Elective Courses*	**9**
Research Course	**12**

Core Courses		**(18 credits)**
ECON 760	Economic Analysis	3
MANA 750	Advanced Statistical Methods	3
MANA 754	Business Research Methods	3
MANA 762	Management Science	3
MANA 764	International Businesses Management	3
MANA 835	IT Policy and Strategy	3

Specialization Required Courses		**(21 credits)**
MAIS 810	Information Systems Modeling	3
MAIS 815	Telecommunications Management	3
MAIS 820	Decision Support Systems	3
MAIS 825	Information Security Management	3
MAIS 830	Web-Based Information Architectures	
RESM 850	Seminar Information Systems I*	3
RESM 860	Seminar in Information Systems II*	3

Specialization Elective Courses*		**(9 credits)**
MAIS 827	Data Warehousing Management	3
MAIS 832	Knowledge Management	3
MAIS 842	Web Services	3
MAIS 847	Special Topics in Information Security	3
MAIS 852	Multimedia Systems	3
MAIS 857	Special Topics in Computer Information Systems	3
MAIS 859	Service-Oriented Architecture	3

Research Courses*		**(18 credits)**
RESM 866	Dissertation I	6
RESM 867	Continuation Dissertation I**	0
RESM 868	Dissertation II	6

*Enrollment in elective courses and research seminars requires advisor approval.
**Optional course three contact hours.

COURSE DESCRIPTIONS

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

ACC0 500
Financial Accounting
Three Credits

This course studies the foundations of financial accounting geared to provide a broad view, including the forms of business organization, the typical accounting cycle within them, the analysis of financial statements, and the management of different financial instruments.

ACCO 501 @
Managerial Accounting
Three Credits

This course emphasizes the study of managerial accounting within a framework of planning, control, and decision-making. It includes topics such as the cost-volume-profit relationship, capital investments, with a special interest in budget formulation and implementation.

Requisite: ACCO 500 or equivalent

ACCO 510
Sustainable Accounting and Finance
Three Credits

The last decades have witnessed the emergence of sustainability concerns for the enterprise. Specifically, one wonders whether it is possible that a company create value and still being socially responsible and sustainable. The empirical evidence so far tells us that companies can accomplish this, but it requires some conditions such as having a sustainable mindset, sustainable accounting and financial tools, and a set of appropriate market mechanisms that are able to manage environmental risk in a proper way. All these topics belong to a new exciting area called “sustainable accounting and finance”.

Requisites: ACCO 501, FINA 503

ACCO 613
International Accounting
Three Credits

This course deals with a comparative analysis of accounting concepts and practices in different countries and the convergence of international accounting standards. It focuses on the problems associated with accounting in multinational corporations, including the transfer of funds and income measurements, consolidation problems, issues in transfer pricing, and policies appropriate for international mergers and company valuation for acquisitions.

Requisites: INBU 610, ACCO 501

ACCO 702
Financial Accounting Theory
Three Credits
The course centers on the analysis of generally accepted accounting principles (GAAP), as established by the Committee on Accounting Research, the Accounting Principles Board, and the Financial Accounting Standards Board.

Requisite: ACCO 501

ACCO 704
Advanced Accounting
Three Credits
The course deals with case studies and analysis of special problems in the field of advanced accounting. Topics include consolidated financial statements, foreign transactions, firm consolidations and mergers, as well as foreign trade and international accounting, and accounting of non private non government organizations. .

ACCO 705
Income Tax in Puerto Rico
Three Credits
The course centers on the study of the conceptual structure of the income tax system, relevant legal aspects in Puerto Rico, and the analysis of income tax returns for all types of business organizations in Puerto Rico.

Requisite: ACCO 501

ACCO 706
Advanced Auditing
Three Credits
The course covers concepts and procedures involved in auditing, professional ethics, audit standards, disclosure problems, and audit opinions on financial statements.

Requisite: ACCO 501

ACCO 707
Federal Income Tax
Three Credits
The federal income tax laws for individuals and corporations will be examined. The course includes case studies to enable the student to bridge theory and practice.

Requisite: ACCO 501

ACCO 708
Computer Applications in Accounting
Three Credits
This course studies the adaptation and interpretation of accounting procedures and systems to electronic transaction processing.

Requisite: ACCO 501 or equivalent

ACCO 709
Budgeting
Three Credits
The course deals with the budget as the basis for an effective planning and control system in the public or private sector. It includes master budgets, capital investments, and strategic planning.

Requisite: ACCO 501

ACCO 710
Governmental Accounting
Three Credits
Study of the all types of funds common to governmental agencies (state and local) and not for profit entities. In the course are also included, financial reports such as: Government's comprehensive annual financial report, Wide government statements, and other, depending on the resources (fund) used in the entity. Budgets and its importance and preparation is part of the course.

Requisite: ACCO 501

ACCO 711
Forensic Accounting
Three Credits
Forensic accounting is one of the fastest growing areas of accounting today Include the study of investigative accounting procedures and techniques used in litigation support. Covers the basic theories and principles of forensic accounting and their application. Topics to be covered include financial reporting fraud, employee fraud, income reconstruction methods, testifying as an expert witness, evidence management, cybercrime, and business valuations. The course discusses practical cases in order to understand the principles and procedures involved and their relationships within forensic accounting. The course is structured to enhance the ability of students to think critically and to develop the knowledge, skills and attitudes necessary to compete effectively in the rapidly changing world of accounting.

Requisite: ACCO 501

ACCO 712
International Accounting
Three Credits
The purpose of this course is introducing to the international dimensions of accounting, financial reporting, and financial control. Understand the global business, cross-border investing and external and internal financial communications. Emphasizes the Development and classification of accounting in Europe and Asia. It includes Reporting and Disclosure, Foreign Currency translation,

Global Accounting and Auditing Standards and International Financial Statement Analysis. Also include Managerial Planning, Control and International Taxation and Transfer Pricing.

Requisite: ACCO 500

ACCO 713
International Financial Markets
Three Credits
The course discusses international financial markets and instruments including currency markets; international diversification and optimal asset allocation. One theme I will return to throughout the class is the globalization phenomenon and its effects on markets, asset allocation and the real economy. Some of the topics to be discussed are Globalization and the Multinational Corporation, Exchange market, Rate Systems, International Debt and Equity Financing and International Capital Budgeting.

Requisite: ACCO 501

ACCO 714
International Banking
Three Credits
This course deals with unstoppable globalization in that we are immersed, is affecting directly the change of the economy in the world and affecting all of the business activities and the contractual relationship, business and financial matters particularly bound obligatory to the business bank, in which its intervention in the international commerce is absolute and determinant. In this course will be discuss the different methods of payments and collections, the contracts banking-financiers of the foreign trade, loan, opening of credits, rules and regulations of this procedures and leasing, forfaiting and the different warranties vinculated to the international operations such as advance payments bond, maintenance bond, performance bond, retention bond, tender bond and bid bond.

Requisites: ACCO 501,FINA 503

ACCO 715
Cost Accounting
Three Credits
The course deals with the study of the generally accepted cost accounting principles. Application of these principles in the planning and control of the elements of costs, including procedures for decision making. In addition, the study of standard costs, budgeting, analysis of variables and reasons leading to the success or failure of diverse programs of action.

Requisite: ACCO 501 or equivalent

ACCO 721
Accounting Seminar
Three Credits
The course centers on the study of contemporary topics relevant to accounting, from both theoretical and practical perspectives. The student will carry out a research project in the area of interest under the supervision of the instructor.

Requisites: Twenty-seven or more credits approved, including MANA 600.

ACCO 745
Corporate Income Tax
Three Credits
This course focuses on the intensive study of statutes, regulations, and cases related to corporate income tax. Topics included are contribution consequences in the organization, distribution to shareholders, redemption of stock shares, liquidation of corporations and sales of assets and stock shares.

Requisite: ACCO 501, ACCO 705, ACCO 707

ACCO 746
Income Tax, Society and Individual Corporations
Three Credits
The course integrates the concepts and principles related to the consequences of contributions profits in partnerships and individual corporations. Emphasis is placed on differences and similarities of partnership and individual corporations. Students will study and analyze concepts, foundations, limitations and contribution practices.

Requisite: ACCO 501, ACCO 705

ACCO 747
Income Tax for Non-profit Organizations
Three Credits
The course centers on the discussion of the significant rules for non-profit organizations. Topics included are rules for non-profit organizations, categories of tax-exempt organizations, requirements to qualify, and restrictions. Charitable entities vs. private foundations will also be examined, as well as documentation and disclosure requirements.

Requisite: ACCO 501, ACCO 745

ACCO 748
Corporate Re-organizations
Three Credits
The course centers on the study and analysis of contribution aspects of acquisitions, legal dispositions and problems related to transactions of tax-exempt organizations. Different types of reorganizations, parts of a reorganization, foreign corporations, utilities and benefits of the corporation

and others contributions consequences will also be discussed.

Requisite: ACCO 501, ACCO 705, ACCO 707

ACCO 749
Income Tax Planning Seminar
Three Credits
The course centers on the study and analysis of financial concepts and taxation, in order to prepare the student in problem solving. Topics discussed include capital budget, tax arrangement, and techniques of the pacification contribution.

Requisite: 9 specialization credits approved

ACCO 750
Taxes Seminar
Three Credits
The course consists of investigation and analysis of tax problem solving, as well as steps involved in tax investigation processes, evaluation, and application to a specific situation.

Requisite: 27 or more credits approved, including MANA 600

ECON 519 @
Managerial Economics
Three Credits
The course centers on the application of microeconomic theory and the tools of analysis of decision sciences to achieve efficient solutions in an organization. It includes fundamental topics such as demand theory, production and cost theory, and market structure.

Requisite: STAT 555 or equivalent

ECON 760
Economic Analysis
Three Credits
The course deals with basic conceptual tools for the study of decision-making in uncertain conditions. Topics to be developed include references and risk attitude of the decision maker and the relationship of these elements to the utility maximization effect. In the second part of the course, traditional techniques of linear programming to determine particular solutions in maximization or minimization problems will be considered. We will focus on the interpretation of solutions (basic and general) and the existence of both. The third part of the course will cover basic notions of game theory. We will develop equilibrium concepts and study their applicability.

Requisite: MATH 505 or equivalent

ENTR 600
Identification and Evaluation of Entrepreneurial Opportunities
Three Credits
The course is designed to develop capabilities to manage the process of venture creation, including feasibility analysis, business planning, managing growth and harvest. The course allows students to discover core aspects of entrepreneurship and identify resources to translate ideas into business concepts. The students will acquire knowledge of concepts, techniques, and skills necessary to identify and evaluate entrepreneurial opportunities and translate these into a business entity. Feasibility studies techniques, development of business plans, and strategies to launch and further grow a venture will be presented.

ENTR 601
E-Commerce
Three Credits
This course introduces students to a wide range of issues of e-commerce from a business perspective. It provides students with skills, and tools of technology needed to help students to develop an understanding of the technologies used in the construction and administration of successful e-commerce applications of all types in business. . Some topics explored in this course include: marketing strategies, security, privacy, infrastructure design, server management, legal liabilities, ethics, and acceptable use policies.

ENTR 602
The Business Plan
Three Credits
Planning in emerging ventures has many purposes and uses. Firstly, planning serves as a mechanism to guide the entrepreneurial intentions and behavior, while monitoring the expected versus actual results. Secondly, access to finance requires the preparation of formal written plans that allow investors to see a glimpse of the yet inexistent venture. Throughout this module, planning in nascent firms will be discussed from the perspective of nascent entrepreneurs and potential investors. At completion of this module, the students are expected to have prepared a formal business plan ready for soliciting finance or venture capital. Therefore the course dynamic will take an action learning approach in which the students will be writing their business plan as they are being introduced to different concepts. The development of the formal business plan will be aided by the use of business planning software.

ENTR 603
Organizational Structure and Design for PYMES
Three Credits
This course is to help students obtain in-depth understandings of organizations through good

comprehension of central theoretical perspectives and paradigms. This course will focus on determinants of an organization's success, focusing particularly on structure and design issues, as well as external environmental factors that impact organizational structure and functioning. A systems theory approach will be taken, making links to the strategic management, power and control literatures, as well as different forms of organizing ("rational" to "natural" organizing). Finally, the effect of macro-level factors on individual decisions and behaviors, and thus organizational effectiveness, will examine from a multiple levels-of-analysis perspective.

FINA 503 @
Managerial Finance
Three Credits
The methodology and concepts relevant to the financial decision-making process are studied. Within the framework of modern financial theory, this course examines how to manage the sources and uses of capital to achieve corporate goals. It specifically includes the study of financial analysis and financial planning techniques, long-run investment decisions, short-run liquidity needs, and long-run financial strategies and instruments.

Requisite: ACCO 500 or equivalent

FINA 610
Banking and Other Financial Institutions
Three Credits
The course centers on the study of the banking system, its structure, regulation and effect on the level of economic activity. The macroeconomic theoretical framework is examined, in order to explain how central banking policies affect the level of employment, income, and prices. The effectiveness of monetary policy and fiscal policy is studied critically.

FINA 611
International Finance
Three Credits
This course reviews the international financial environment and the policies involved in managing the financial function in multinational corporations. Also covered are the role of major multilateral financial institutions, international capital flows, and the management of financial risks in international markets. Foreign exchange risks, hedging policies, and international capital budgeting also are treated. The role of the CFO in determining policy is also a central theme of the course.

Requisites: INBU 610, FINA 503, ECON 519

FINA 620
International Finance
Three Credits
The course deals with financial management of foreign operations of international enterprises. Emphasis is placed on international investments and the financial constraints of the international environment and trade.

FINA 702
Corporate Finance
Three Credits
This course covers the theory and empirics of corporate finance. The starting point of the course is an introduction to the Modigliani-Miller irrelevance theorems, which describe a frictionless set-up in which capital structure is independent of the firms' characteristics or choices and is irrelevant for the valuation of the firm. A variety of deviations from this frictionless scenario are then studied. In these different cases we analyze optimal capital structure, payout policies, corporate taxation, financial distress, the use of capital structure as a signaling device, and control allocation, amongst others, and how these affect the firm's valuation and investment decisions. In addition, we will also cover topics related to corporate governance, initial public offerings, managerial compensation, financial constraints and mergers and acquisitions.

Requisite: FINA 503

FINA 704
Entrepreneurial Finance
Three Credits
This course covers the financial aspects of small business entrepreneurship for owners of sole proprietorships, partnerships, and small nonpublic corporations. We cover (in varying degree) the following topics: economic concepts of finance, management functions, business organizations and ownership, elements of a business plan, problems with financial statements, vertical analysis, horizontal analysis, ratio analysis, profitability, bankruptcy, break-even analysis, forecasting, pro forma financial statements, current working capital management, effective rate of return, time value of money, techniques of capital budgeting, risk management, investment strategies, pension planning, and estate planning. There will be a heavy use of cases for the application of entrepreneurial financial concepts.

Requisites: FINA 503, FINA 702, FINA 706

FINA 705
Options, Futures and Other Derivates
Three Credits
The purpose of this course is to help prospective financial managers, general managers and senior functional managers gain a thorough understanding of what financial derivatives

are, how they work, how they are used, and how to measure the risks and rewards associated with them. While using and trading derivatives can add enormous value to a firm, a lack of understanding of risk management techniques can easily lead to disaster. It is, therefore, vital for financial and nonfinancial firms to be knowledgeable about the latest tools, tactics, and strategies for risk management using derivates. This course consists of two parts. The first part of the course deals with the structure of futures markets, pricing of futures contracts and hedging with such contracts. The second part of the course deals with options markets; strategies, pricing and position analysis and hedging with such contracts. The course will consist of lectures, discussions, problem solving, cases and market tracking.

Requisites: FINA 503, FINA 702, FINA 706

FINA 706
Investments and Financial Markets
Three Credits

This course discusses Portfolio Theory with applications to the markets for equities, fixed income securities, and options. Risk analysis and investment strategies are discussed within the financial crisis context. The following question will be proposed to students: How can I increase the value of my firm by using investments? The answer to this question will be the object of study in this course. There will be a heavy use of cases and paper for the application of Investment theory so that an answer to the "course question" may be developed.

Requisite: FINA 503

FINA 707
Risk Management in Financial Institutions
Three Credits

A financial institution faces market and credit risk every day: Changes in foreign exchange rates, interest rates, stocks, and commodity prices make organizations vulnerable to financial loss. As a result, uncertainty surrounds an organization's future and the fair market values of its assets and liabilities. This course offers insight on managing uncertainties and the successful use of hedging strategies and derivative instruments, demonstrating how to aggregate information from across an organization, combine different instrument types into one portfolio, perform scenario and stress tests, calculate at-risk measures, and deliver a customized report. Also presented is an overview of the most recent techniques used in credit-risk management, aimed at new models in this fast-developing area. Examples taken from well-known cases underline the importance of an adequate credit-risk management system.

Requisite: FINA 503, FINA 702, FINA 706, FINA 705

FINA 708
Financial Management in Public, SME's and Non Profit Organizations
Three Credits

This course studies the finances of public, SME's and nonprofit organizations from an integrated point of view. The finances in public organizations are guided by the Government's fiscal, economic and monetary policies. These policies will have a direct impact on SMEs and nonprofit organizations. On the other hand, the Government needs to promote the creation and proliferation of SMEs and nonprofits to maximize economic growth in a country. This course discusses financial statements, legal financial requirements, structure of cash flows, investments opportunities, and financing for each type of organization. The concept of entrepreneurship is applied to expand the financial possibilities of each type of organization. There will be a heavy use of cases for the application of financial concepts into each type of organization.

Requisites: FINA 503, FINA 702, FINA 706

FINA 709
Global Corporate Finance and Sustainability
Three Credits

In this course the participants will be able to develop a body of knowledge, practices, attitudes, and skills needed to make financial decisions for global enterprises. The course is a continuation of Corporate Finance FINA 702. It takes on the topics where Corporate Finance leaves off. Its aim, precisely, is twofold: (a) to take the topics of Corporate Finance to a global platform, and (b) to further expand upon those topics in line with the most recent developments in financial strategies related to firm's sustainability and in business/economic practices that are global in nature. The course is a mix of about 70 percent finance and 30 percent economics. Both the finance and economics components are heavily cast in the framework of strategy and decision making in a global environment.

Requisites: FINA 503, FINA 702

FINA 715
International Finance
Three Credits

This course is devoted to studying international monetary economics and finance both theoretically and empirically. We begin with a historical overview of the gold standard, the Bretton Woods's System, and current international monetary regimes and currency systems. We then examine theoretically and empirically the balance-of-trade and balance-of-payment accounts and their adjustments. Exchange rate systems and exchange rate determination and adjustments are also studied, with particular attention to empirical studies on exchange rate dynamics and their impact on macroeconomics. Special emphasis is given to the

study of international monetary and financial arrangements, the financial sector, and financial instability and monetary and fiscal policy issues. Topics include issues of exchange rate volatility and its impact on the real and financial sector, foreign debt, capital flows, currency runs, and international portfolio choice; World Bank and IMF policies and issues concerning financial market liberalization; international financial regulations; and international financial architecture. There will be a heavy use of cases for the application of International finance concepts.

Requisites: FINA 503, FINA 702, FINA 706

FINA 716
Money, Banking and Investment Markets
Three Credits

Money and banking is an interesting and diverse field of study. It may be focused from an investments point of view. Financial news channels on cable provide a nearly 24 hour stream of reporting and analysis of the conditions in the Investment markets around the world. Websites are created to provide more analysis -some good, some bad - on global investment conditions. The host of financial crises in the emerging-market economies have served to remind economists, bankers and investors of the importance of the banking system, and to reconsider appropriate risk taking. The recent debates over globalization as seen in documentaries and the mass of new books published on the subject have neglected one of the most prominent features of this process – the role of investments (financial) instruments and ethics. The study of money, banking and investment markets should help to make sense of these topics. To do so, it will require some background in investment theory, a means to organize one's thinking, and a basic knowledge of some of the technical details and institutions, therefore, this course will concentrate in the interactions of several key players as banks as the primary financial intermediaries, the federal reserve as the executioner of monetary policy, the government as the initiator of fiscal policy and the private and institutional investors as the fuel of the economy through investment markets. This course presents a broad picture of the system to any prospective investor. The use of case study will enhance the integration of all parts of the system.

Requisites: FINA 503, FINA 702

FINA 717
Advance Investment Knowledge
Three Credits

This course will provide the student with further immersion into the investment knowledge from a realistic and practical point of view: How is life being an investment broker?. What does it take to become an investment broker? What is the practical difference between a broker and a dealer? The course discusses the micro structure of an investment market with emphasis in the role of an investment broker in the market inner workings. The use of case studies will be one of the main tools for discussion of different investment topics as well as the presence of real investment brokers in the class.

Requisites: FINA 503, FINA 702, FINA 705, FINA 706

FINA 721
Advance Finance Seminar
Three Credits

Seminar style course in which they discuss cases, articles and lectures on contemporary issues in finance. Integrate concepts and skills acquired in major courses. The selection of cases, articles and lectures to be studied is designed to encourage analytical discussion, generate ideas and application of concepts and models relevant to financial decision making in an environment that simulates the one where you play in your work area future.

Requisite: 27 credits approved including MANA 600.

HURM 630
Employee Relations and Services
Three Credits

The course promotes discussion and analysis of related aspects of human relations in organizations, including motivation, comprehensive approaches and fundamentals of human behavior, incentives, group dynamics, affirmative action programs, rewards, sanctions, and related theories within the organizational setting.

HURM 640
Collective Bargaining
Three Credits

This course provides the student with the fundamental skills needed to participate fully in any situation requiring bargaining skills. Analysis of the legal aspects and the historical experience of collective bargaining. Topics studied are: bargaining structure and techniques, arbitration administration, complaint and grievance procedures, and environmental influence on the process. Differences and similarities of collective bargaining between the private and the public sector are examined.

Requisite: HURM 710

HURM 710 @
Human Resources Management
Three Credits

The course deals with philosophy, techniques and policies of the management of human resources in modern organizations. A conceptual model of personnel administration is discussed. The analysis is supplemented with classical case studies.

HURM 715 @
Advanced Supervision
Three Credits
The course provides the student with the skills and knowledge necessary to carry out effectively the managerial functions of planning, organization, direction and control of personnel.

HURM 716
Personnel Recruitment and Selection
Three Credits
The course centers on revision and analysis of the different stages of the personnel recruitment and selection process, beginning with the identification of the need to recruit, up to the moment an employment offer is made.

Requisite: HURM 710

HURM 719
Proactive Leadership in the Organization
Three Credits
The course centers on the study and analysis of proactive leadership in an organization. It provides the knowledge needed to be a proactive leader in an organization.

Requisite: HURM 710

HURM 720
Performance Evaluation
Three Credits
This course was designed to provide a general vision and understanding of the theory associated with performance appraisal, its methods and the way it is related to the Human Resources System in the organization. It includes the discussion of performance appraisal methods and tools for the evaluation and development of performance appraisal instruments. The course will also provide a view of the legal aspects and international contexts of the performance appraisal.

Requisite: HURM 710

HURM 725 @
Labor Law
Three Credits
The course promotes the analysis, evaluation, and discussion of local and federal laws pertaining to the employer-employee relationship in Puerto Rico. Topics discussed include fair employment practices, wage and salary legislation, anti-discrimination laws, promotion, termination, and other pay-related actions.

Requisite: MANA 501, HURM 710

HURM 727
Concentration Test in Human Resources
Three Credits
This course was designed to provide students the opportunity to integrate knowledge obtained in their concentration, to review the main theoretical concepts, and to take the specialty test to obtain the degree. During the course, the students must review both theoretical and practical concepts of their concentration. At the end of the course, the student must take the concentration test.

HURM 730 @
Compensation System and Benefits Management
Three Credits
The principles underlying employee compensation are studied in the course. Different wage and salary systems and their benefits programs found in moderns businesses are examined. The creation, implementation and maintenance of a salary plan, together with the methods of job evaluation for value determination, are topics considered.

Requisite: STAT 555, MANA 501

HURM 732 @
Occupational Health and Safety
Three Credits
The course covers fundamental aspects of existing legislation and policies regarding occupational health and safety, compensation, and distribution of responsibilities.

Requisite: HURM 710

HURM 735 @
Human Resources Seminar
Three Credits
Course designed to guide students to conduct research within their area of study under the direction and supervision of professor. The course is an individualized development. The course includes identification and discussion of problematic situations that can be investigated, analysis and events that relate to it. It also includes the recognition of independent and dependent variables of the problem, formulation of basic research questions, type of research, formulating hypotheses, and defining limitations of the study. It also discusses the aspect of the readings relevant to the research population and sample of the study, design of instruments to be used in data collection, identification and description of the operational procedures and statistics to be used in the analysis of data collected in the study. Then the student emphasizes the aspect of statistical presentation of the findings and their interpretation, summary, conclusions and recommendations.

Requisite: 27 or more credits approved, including MANA 600

HURM 737 @
Human Resources Concentration Test
Three Credits
This course was designed to provide the opportunity to the students to integrate the knowledge of their concentration, to review the main theoretical concepts and to take the Test to obtain the degree. During the course, the students must review both, theoretical and practical concepts of their concentration. At the end of the course the student must take the concentration test.

Requisite: All specialty courses

HURM 738 @
Knowledge Integration in Human Resources
Three Credits
This course was developed to provide to the student of the Graduate Program in Human Resources, the opportunity to examine and compare their knowledge with the actual conditions of the organizations. The student can identify, discuss and analyze in a critical way the concepts and theories in management using real situations of different organizations. The analysis will be in an integrative way in which the student can use the knowledge acquired in their concentration courses.

Requisite: 27 or more credits approved, including MANA 600

INBU 610
The International Business Environment
Three Credits
This is an introductory course in international business. The basic content of the course includes (1) an overview of the means of conducting international business, with an emphasis on what makes international different from domestic; (2) the effects of the social systems within countries on the conduct of international business; (3) the major theories explaining international business transactions and the institutions influencing those activities; (4) the financial exchange systems and institutions that measure and facilitate international transactions; (5) the dynamic interface between countries and companies attempting to conduct foreign business activities; (6) corporate strategy alternatives for global operations; and (7) international activities that fall largely within functional disciplines.

INBU 709
International Business in Latin America and the Caribbean
Three Credits
This course is focused on the business activities carried out across Latin America and the Caribbean. The course reveals macro environment aspects: politic, economy, legal and regulatory, technology, cultural and other and how they impact the multinational enterprise that wishes to establish itself in the region. Furthermore, it analyzes the particularities of the region from the functional perspective of the business organization.

Requisite: INBU 610

INBU 710
Legal Environment of International Business
Three Credits
A study of the international political, bureaucratic, and legal structures regulating and governing international trade, including multilateral and bilateral arrangements. Schemes for the removal of trade barriers, methods of international contracting, and doing business abroad in the context of international legal environment will be a primary course focus.

Requisite: INBU 610

INBU 711
Exports and Imports
Three Credits
Managing the export/import department; government regulations affecting imports; financing, insuring, transporting, and marketing of exported or imported raw materials and finished products; methods of purchasing foreign products and selling domestic goods abroad; joint marketing; licensing; distributor relations.

Requisite: INBU 610

INBU 712
Contemporary Issues in International Business
Three Credits
This course is designed to provide students with the opportunity to examine and analyze topical issues in International Business. Such rapid changes in global environments may put potentially significant impact on the international business and the home and/or host nations associated. This subject assumes students to have fair degrees of understanding in the complexities of global cultural, political, economic, organizational, and financial forces of international business environments and recognize how they affect their firm. As contemporary issues around international business continue to evolve but many times unpredictably, challenges for firms to adjust, reshape and/or reconstruct their strategic directions and thereby organization and management structure become inevitable. This subject will introduce past, current and emerging issues in international business environments and equip students to apply theories/concepts learned from first hand international business subjects into more coherent and real-life practices.

Requisite: INBU 610

INBU 715
Managing Global Production
Three Credits
This course explores the management of technology and its relationship to the dynamics of globalization in production in both the manufacturing and service industries. It focuses primarily on the management of international supply chains and on the coordination of manufacturing and service activities across different geographies. In addition to analyses of corporate logistics, the course emphasizes international business process outsourcing and the modeling of international business problems.

Requisite: STAT 555, INBU 610

INBU 720
International Business Studies
Three Credits
The International Business Studies course is an intensive course that explores the business in the context of Latin America and the world. This course is taken outside of Puerto Rico in one of the Partner Universities of our School of Business. Possible topics are: marketing, bilateral trades, financial markets, strategy, work environment, culture, history and law. Also, some local companies will be visited.

Requisites: 27 credits approved or more, including MANA 600

MAIS 525
Information Technology in Business Administration
Three Credits
This is a core course that examines the development and application of information technology resources in business organizations. The course provides an overview of the changing nature of organizations as they evolve from the command and control model to an information-competitiveness. The array of technologies available to support and facilitate the attainment of organizational goals will also be studied. Requires laboratory.

MAIS 605
Application Development Technology
Three Credits
This core course deals with the development and application of information technology resources in business organizations. The techniques for increasing competitiveness and the array of technologies available to support and facilitate organizational goal are also studied.

Requisite: MAIS 525

MAIS 615
Systems Analysis and Design
Three Credits
This is a major course that provides the skills, background and understanding to effectively participate in the coding and testing phase of the system development life cycle. The course focuses on the use of algorithms, data structures, procedural abstraction, and mechanisms provided in modern programming languages.

Requisite: MAIS 525

MAIS 625
Object-Oriented Programming
Three Credits
The course deals with advanced topics in programming languages. It provides the opportunity to explore new business applications of emerging hardware and software technologies. The course expands the vision of object-oriented programming as a computing paradigm by exploring its role in modeling, analysis, design, programming, and databases, as well as organizational structure of information systems and processes for software development.

Requisite: MAIS 615

MAIS 635
Database Management
Three Credits
The course deals with techniques for managing the design and development of large database systems, including creating and using logical data models, client/server applications and object oriented programming. Tests of the architecture and structure of a relational database system are executed, in order to compare hierarchical databases and file system processing. Requires laboratory work.

Requisite: MAIS 615

MAIS 645
Business Data Communications and Networks
Three Credits
The course centers on foundations for the design of computer networks. Current methodologies, topologies, and practices in the computer communication networks will be covered.

Requisite: MAIS 615

MAIS 655
E-Commerce Technology
Three Credits
The course deals with management opportunities, challenges, and strategies involved in successfully developing and maintaining electronic commerce. The course includes topics in infrastructure design, server

management, security, implementation, marketing, and strategies for E-commerce.

Requisite: MAIS 625

MAIS 704
Information Technology: Management and Policy
Three Credits
This is a major elective course that integrates information technology and information systems with business operation and management. It emphasizes the importance of technology for end-users in business. It also presents important concepts of information systems and business.

Requisite: MAIS 655

MAIS 708
Information Technology: Project Management
Three Credits
This is a major elective course that develops the skills and abilities needed by project managers to achieve a higher competitive level in today's organizations. It includes discussion of the business operational environment to develop roles, strategies and competitive projects.

Requisite: MAIS 704

MAIS 734
Database Object-Oriented Applications Development
Three Credits
This is a major elective course in which students will develop the necessary skills for designing and creating graphic interactive applications on a relational database. It also emphasizes the use of multiple strategies to support management decisions within the organization.

Requisite: MAIS 625, MAIS 635

MAIS 738
Data Warehousing Management
Three Credits
The course is designed to prepare students for the management of data warehousing using databases. The student will learn how to plan, design, and develop all the methodology to build a successful data warehouse.

Requisite: MAIS 734

MAIS 744
Optical Networks for Data Communications
Three Credits
The course introduces the student to optical networks technology for effective business data communications. It includes the modern methods for multi-wavelength optical networks and emphasizes effective techniques for routing, switching, and data manipulation on optical networks.

Requisite: MAIS 645

MAIS 748
Mobile and Wireless Data Communication
Three Credits
This course introduces the student to designing wireless information technology. It includes the methodology to design user interfaces for mobile applications and Web sites that works in the mobile environment. It also provides a guide for redefining existing Web sites, working with wireless devices, cellular phones, and PDAs, taking advantage of the special properties of the current and next generation mobile networks.

Requisite: MAIS 744

MAIS 810
Information Systems Modeling
Three Credits
The course deals with establishing information requirements in enterprise wide applications and the process of translating these requirements into global design architecture. It includes a comparison of different methodologies for requirements analysis. Database architecture modeling in the design process is emphasized. The students explore several approaches for completing design specifications that satisfy existing information requirements.

MAIS 815
Telecommunications Management
Three Credits
The course deals with fundamentals of effective management of organizations that develop, operate, and/or use telecommunications. Topics will include underlying technical aspects of voice and data networks, protocols and services, industry and regulatory structures and practices, and practical questions that arise from these issues. The management perspective is emphasized.

MAIS 820
Decision Support Systems
Three Credits
The course covers development, implementation, and application of Decision Support Systems (DSS). Discussions include how these systems can be applied to current business problems, as well as organizational issues associated with the implementation and usage of these systems. The course will consist of four main components: decision-making, data management for DSS, modeling techniques for DSS, and collaborative computing.

MAIS 825
Information Security Management
Three Credits
The course centers on the analytical methods of assessing and improving systems security and survivability. Emphasis

is on studying the theory, mechanism, and implementation of information security and data protection. Topics include fundamentals of system architecture, formal models for computer security, system survivability analysis, security threats, and security architecture strategies and implementation.

MAIS 827
Data Warehousing Management
Three Credits
The course deals with the major activities involved in a data warehousing project and how it differs from other database systems. Topics include creating a database model that is specifically optimized for data warehousing, moving data from a source database to a warehouse, and using different tools to access the data in a warehouse with hands-on experience. Organizational and management issues and the common applications in which warehousing is being used today will also be discussed, as well as the kinds of support that Oracle DBMS provides for data warehousing.

MAIS 830
Web-Based Information Architectures
Three Credits
The course deals with design, creation, and usage of web sites and related software. The course focuses on how to use search engines optimally, design e-business sites, analyze competition, and how to archive page access paths in the service of successful e-commerce infrastructures. The course addresses issues related to the creation of search engines, as well as web-based information architectures.

Requisite: MAIS 825

MAIS 832
Knowledge Management
Three Credits
The course deals with integration and use of software in infrastructure management to streamline operations, boost productivity and achieve strategic planning goals. Topics include the use of Computer Aided Design (CAD), Computer Aided facilities Management, Executive Information Systems and Knowledge Management (KM), in order to integrate these and other infrastructure management functions in new and emerging technologies.

MAIS 835
IT Policy and Strategy
Three Credits
The course covers the strategic use of information technology from a business perspective at the enterprise level. Emphasis is on the development and implementation of policies and plans to achieve organizational goals. Topics discussed include defining the systems that support the operational, administrative, and strategic needs of the organization, its business units, and individual employees. Students will study approaches to managing the function of information systems and the dual challenges of effectively controlling the use of well-established information technologies, while experimenting with selected emerging technologies.

MAIS 842
Web Services
Three Credits
Students will explore and construct web services designed for use in other servers over the Internet. Topics include design and implementation of new services that facilitate collaboration and education. Participants will design, develop, and deploy web services. If appropriate, the web services created will be linked together to demonstrate the concept of web service supply chains.

Requisite: MAIS 830

MAIS 847
Special Topics in Information Security
Three Credits
This course examines the characteristics of highly distributed applications, limitations of traditional security approaches, new alternatives now being developed, and implications for critical infrastructures. Topics of current interest include: secure operating systems and networks, intrusion detection, cryptographic theory and applications, vulnerability analysis, and deceiving code detection.

MAIS 852
Multimedia Systems
Three Credits
The course centers on the study of theoretical and practical issues in designing multimedia systems. Topics include an introduction to multimedia systems, compression techniques, synchronization, user interface, storage, and operating system support for digital audio and video, as well as network and transport protocols for multimedia.

Requisite: MAIS 830

MAIS 857
Special Topics in Computer Information Systems
Three Credits
The course covers topics that are not included in the regular doctoral program curriculum. The topic will vary each semester and will be published one semester in advance.

MANA 501 @
Organizational Behavior
Three Credits
The course centers on the study of the conceptual and analytical foundations of human behavior in the

organization. The impact of organizational variables of employee satisfaction and the performance of the organization will be examined. A case study approach is used.

MANA 505
Information Systems
Three Credits
This course covers the fundamental concepts and application of management science techniques to support business strategy. Emphasis is on systems planning, development, and implementation. Computer laboratory is used for case solutions.

MANA 511
International Management
Three Credits
This course deals primarily with the managerial practices and functions that characterize successful international corporations. It covers issues of organizational structure, planning and budgeting systems, management development and human resources, ethics, cross-cultural issues, the applicability and adaptation of culture-bound policies, communications, and the management of multi-cultural teams. Emphasis is placed on the processes by which multinational organizations are managed, including conflict management, multi-country integration mechanisms, and negotiation strategies.

Requisite: INBU 610

MANA 600 @
Research Methods
Three Credits
The course examines the nature and scope of research design and its application to management science. It also incorporates the statistical tools commonly used in the research process and in the development of a research proposal.

Requisite: STAT 555 or 24 credits approved or more

MANA 603 @
Material Management
Three Credits
This course presents an introduction to the concept of materials management and its functions of production planning and control, control of inventories, purchasing, and physical distribution. It includes a study of the techniques of materials control applicable to the manufacturing industry, emphasizing the relationship of these to the overall functioning of the enterprise.

Requisite: STAT 555

MANA 606 @
Purchasing Management
Three Credits
The course centers on the study of concepts which define the function of purchasing in industry. The course will present the theoretical and practical aspects related to the function of purchasing and its organizational structure, selection and evaluation of suppliers, strategies for negotiation, budgeting, computerized systems, international purchasing and legal aspects.

Requisite: MANA 603

MANA 609
Quality Control Management
Three Credits
This course is oriented toward the development of procedures for quality systems, requirements for the areas of service, projects, manufacturing and employee involvement.

MANA 612
International Strategic Management
Three Credits
Operating in a global rather than domestic arena presents the manager with many new opportunities. However, with these new opportunities come the challenges of managing strategy, organizations, and operations that are more complex, diverse, and uncertain. Unlike purely domestic competitors, companies that compete across borders have to make choices about which product to offer around the globe; where to compete within the world; where to locate the various activities of the firm; and how to organize to effectively coordinate its worldwide activities. This course focuses on these challenges in order to develop and implement corporate strategies in a global environment. It is structured to provide students with conceptual and practical understanding of the strategic challenges of multinational corporate management.

Requisite: INBU 610

MANA 621
Business Law
Three Credits
Local and federal laws relevant to business activities in Puerto Rico will be examined in the course. Students will discuss the interpretation of these laws and how they solve current problems faced by businesses in Puerto Rico.

MANA 625 @
Total Quality Management
Three Credits
The course centers on the presentation of the principles and concepts of the total quality management philosophy and its application in business and industry.

Requisite: MANA 501, STAT 555

MANA 640
Collective Bargaining
Three Credits
The course promotes the analysis of legal aspects and the historical experience of collective bargaining. Topics studied include bargaining structure and techniques, arbitration administration, complaint and grievance procedures, and environmental influences on the collective bargaining process. Differences and similarities between collective bargaining in the private and the public sectors are examined.

MANA 641
Business Philosophy
Three Credits
The course deals with trends or philosophical currents adopted by the firm, on which an organizational policy consistent with its social responsibility is built. Topics included the philosophical debate, business ethics, nature, evolution, strategies, and auditing of the social responsibility of the firm. The case study approach is used.

MANA 701 @
Inventory Control Management
Three Credits
The course centers on the discussion of the latest concepts, techniques and managerial foundations of inventory control and its application in different industries.

MANA 705 @
Production Management
Three Credits
This course deals with concepts, techniques and decision-making in production operations management. Among the specific topics included are: acquisition and utilization of raw materials, short and long term projections, job programming, purchasing and inventory control production scheduling according to demand, quality standards, and incentive systems.

Requisite: STAT 555

MANA 708
Theory of Forecasting
Three Credits
This course is concerned with the necessity of predicting the behavior of products sales. Such predictions are used to improve planning of management activities. The student will learn different statistical models for the use of forecasts. The course will help the student to relate forecasts to planning and manufacturing activities. Different forecasting techniques will be evaluated both qualitatively and quantitatively.

Requisite: STAT 555

MANA 711
Manufacturing Systems and Techniques
Three Credits
The main objective of this course is to familiarize the student with the latest developments in management geared toward "World Class Manufacturing". It will introduce the concept of "Just-in-Time" and its applicability in the area of manufacturing. It also includes the requirements and implementation of "Manufacturing Resource Planning".

Requisite: MANA 705

MANA 713
New Products Management
Three Credits
The course centers on the study of the development of new products and services. Among topics analyzed are market opportunities, identification, concept tests, product design, prototype development, and the creation of a marketing mix to launch the product. Some legal aspects such as patents, trademarks and copyrights will also be discussed.

Requisite: MARK 511

MANA 714
Management by Objectives
Three Credits
This course guides the students towards the practice of Management by Objectives (MBO). It includes techniques and tools used in management based on the objectives established by the organization. Emphasis is given to the identification of priorities, starting from the premise that human and fiscal resources are scarce, and on the need to maximize production and minimize costs.

Requisite: MANA 603

MANA 717 @
Materials Management and Control Seminar
Three Credits
Course designed to guide students to conduct research within their area of study under the direction and

supervision of professor. The course is an individualized development. The course includes identification and discussion of problematic situations that can be investigated, analysis and events that relate to it. It also includes the recognition of independent and dependent variables of the problem, formulation of basic research questions, type of research, formulating hypotheses, and defining limitations of the study. It also discusses the aspect of the readings relevant to the research population and sample of the study, design of instruments to be used in data collection, identification and description of the operational procedures and statistics to be used in the analysis of data collected in the study. Then the student emphasizes the aspect of statistical presentation of the findings and their interpretation, summary, conclusions and recommendations.

Requisites: ACCO 501, ECON 519, FINA 503, MANA 501, MANA 600, MARK 511, STAT 555, HURM 710, HURM 715 & HURM 725 (27 credits or more approved, inclusive MANA 600)

MANA 718
Study of Time and Motion
Three Credits
This course deals with technical areas for the study of manufacturing management. Concepts for development of time and motion studies will be covered in detail. Work methods in terms of time, value of work, and the human element will be systematically discussed.

Requisite: STAT 555

MANA 719 @
Knowledge Integration in Materials Management and Control
Three Credits
This course was developed to provide to the students of the Graduate Program in Materials Management and Control, the opportunity to examine and compare their knowledge with the actual conditions of the organizations. The student can identify, discuss and analyze in a critical way the concepts and theories in materials management using real situations of different organizations. The analysis will be in an integrative way in which the student can use the knowledge acquired in their concentration courses.

Requisite: all courses approved.

MANA 720 @
Advanced Production Management
Three Credits
The course centers on the study of advanced topics in the following areas: functional arrangements of equipment and machinery, equipment acquisition, quality planning, operations, programming, purchasing of materials, storage operations, control of inventories, and administration of human resources.

Requisite: MANA 705

MANA 721
Planning of Production Facilities
Three Credits
The course deals with techniques for procuring an orderly and efficient arrangement of the available physical space, materials, machinery and equipment, industrial processes and other relevant factors, in order to accomplish the most economical and productive manufacturing operation.

Requisite: MANA 705

MANA 722
Basic Principles of Project Management
Three Credits
The course offers students theoretical and practical training in the use of a methodology that has been accepted and tested worldwide, specifically, the one proposed by the PMI® (Project Management Institute) in its PMBOK® guide (Principles Guide of the Project Management). This document has become the standard for managing different kinds of projects successfully.

MANA 723
Project Management: Quality and Risk
Three Credits
The course centers on the discussion and analysis of the principles of project quality and risk, as defined by the Project Management Institute (PMI) in the Project Management Body of Knowledge (PMBOK).

MANA 724
Project Management Human Resources
Three Credits
The course centers on the analysis of all the topics that have been related with the Human Resources, the communication, the contracting and the labor law, besides, this course details topics like: motivation, leadership, conflicts, decision taking, meeting driven, interviewers and more topics related. Also, this course analyses the faculties that a Project Manager must have and how should be his relation with the team work in particular and with all the people involved in the whole plan.

Requisites: MANA 722

MANA 726
Strategic Planning in Project Management
Three Credits
This course was designed to develop students' competence in strategic definition and strategic planning, and their application to Project Management activities as one of the

core processes of the discipline. The course also introduces students to the identification and development of the organization and Project Strategy. Students will also be introduced to the development of the strategic planning process based on organizational strategies and the development of the strategic plan for the Project. In addition, the importance of strategic decision making in the process will be emphasized.

Requisites; MANA 722, MANA 724

MANA 727 @
Concentration Test in Materials Management and Control
Three Credits
This course was designed to provide students the opportunity to integrate the knowledge obtained in their concentration, to review the main theoretical concepts, and to take the specialty test to obtain the degree. During the course, students must review both theoretical and practical concepts of their concentration. At the end of the course the student must take the concentration test.

Requisite: Specialty courses approved

MANA 728
Project Quality Management
Three Credits
The course centers on the discussion and analysis of quality management principles in the context of the Project Management activity.

Requisites: MANA 722, MANA 724

MANA 729
Risk Management Project
Three Credits
The course centers on the discussion and analysis of risk management principles in the context of the Project Management activity.

Requisites: MANA 722, MANA 724

MANA 730
Project Cost and Procurement Management.
Three Credits
The course deals with project management concepts in the areas of project costs and acquisition. It will include costs estimation techniques, project budget preparation, and cost control. The course also includes discussion of costs and acquisition planning, hiring, auctions, managing and contract closing. The evaluation of the managerial process applied to different project experiences will be emphasized.

Requisites: MANA 722, MANA 724, MANA 726, MANA 728, MANA 729

MANA 731
Business Policy
Three Credits
This is an interdisciplinary course that provides the student with the tools to approach specific business problems. It includes strategic formulation and policy design for the firm.

MANA 732
Occupational Safety and Health
Three Credits
The course centers on the study of legislation, regulations and standards on occupational health and safety pertaining to employers and employees. Topics for discussion include: safety legislation, accidental loss, employee compensation, the Occupational Safety and Health Act (OSHA), codes and standards of safety, managerial responsibility, risk and control, and planning for emergencies. Aspects such as the implantation and supervision of occupational health and safety will be emphasized.

MANA 736 @
Management Seminar
Three Credits
In this course the student has the opportunity to develop, under the instructor's supervision, a research paper on a specific aspect of the management of the firm.

MANA 737 @
Concentration Test in Management
Three Credits
This course was designed to provide students the opportunity to integrate the knowledge obtained in their concentration, to review the main theoretical concepts, and to take the specialty test to obtain the degree. During the course, the students must review both theoretical and practical concepts of their concentration. At the end of the course the student must take the concentration test.

Requisite: 27 or more credits approved, including all specialty courses

MANA 738 @
Knowledge Integration in Management
Three Credits
This course was developed to provide students of the Graduate Program in Human Resources the opportunity to examine and compare their knowledge with actual conditions in organizations. The student can identify, discuss and analyze in a critical way the concepts and theories in materials management, using real situations of different organizations. By practicing integrative analysis, students will be able to use knowledge acquired in their concentration courses.

Requisite: 27 or more credits approved, including MANA 600

MANA 739
Seminar in Project Management
Three Credits
The course centers on the discussion and analysis of the principles of quality management in the context of project management, according to the methodology of the Project Management Institute (PMI) in the Project Management Body of Knowledge (PMBOK).

Requisite: 27 or more credits approved, including MANA 600

MANA 742
Simulation
Three Credits
The course is held in a simulated environment of businesses and their managers to get the most out of it. This program tries to business using the same variables, relationships, and developments in the world of business realities. Consists of several cycles of decisions (commercial, production, research and development, human resources, finance). The Simulator aim to provide a representation of business realities. Play business complexity, and at the same time achieve the pedagogical objectives previously commented, involves limiting the scenario of the game and therefore a set of rules that sketcher only the capacity for action of the participants. Simulation seeks to maximize the efficiency of the decision-making process, and get the most, joining a team of students (managers) responsible for the direction of a company competing in a market simulated by the program.

Requisites: 27 credits approved or more, including all specialty courses.

MANA 750
Advanced Statistical Methods
Three Credits
Students will gain experience working with advanced statistics. They must work with statistical software such as SPSS, analyzing data related to their areas of interest. Topics include multiple linear regression, discriminate analysis, factor analysis, cluster analysis, analysis of variance, and analysis of qualitative data.

Requisite: MATH 505 or equivalent

MANA 754
Business Research Methods
Three Credits
The course promotes integration of scientific research and managerial decision-making. Students can note the variety of research in different areas of business, such as production, operations research, business policy and strategy, organizational behavior, human resources management, information systems, marketing, accounting, and finance. The course includes discussion of the research process, from the statement of the problem to the conclusions. Aspects of ethical considerations involved in conducting research, including cross-cultural research, will also be discussed.

MANA 762
Management Science
Three Credits
The course is an introduction to concepts and techniques in quantitative approaches to decision-making; modeling methodology (linear, integer, nonlinear, multiple-objectives programming). Modeling tools (sensitivity and post-optimality analysis); software; applications in production planning and scheduling, inventory planning, project management, distribution systems planning, facility sizing, product development, communication system design, trends in management and in the development of management science theory.

MANA 764
International Business Management
Three Credits
The course presents an overview of the particular aspects of doing business in a global context. It includes discussion of the importance of the global business, the selection of countries as markets, and the development of a coordinated international business strategy in the marketing, human resources, accounting, and financial functions of a business entity.

MANA 800
Business Data Analysis
Three Credits
The course centers on managerial data analysis to transform raw business data regarding management process and markets into organized information, in order to identify meaningful patterns and relationships useful to interpret and perform analysis for improved decision-making. The course stresses the theoretical development and the practical application of each technique. The student may integrate the use of statistical analysis capabilities of PC-based computer software, summarize raw data, and interpret patterns in those data, make and interpret statistical inferences, execute and interpret rudimentary regression analysis, recognize limitations of statistical analyses and identify pitfalls in their interpretations.

Requisite: MATH 505 or equivalent

MANA 802
Corporate Finance
Three Credits
The course is an in-depth study of theoretical and empirical research on financial decision making; debt and equity valuation; risk analysis and risk management. Topics covered

include investments decisions, capital budgeting and cost of capital decisions; corporate financing decisions and the financial markets; dividend policies and capital structure decisions; interactions of investment and financing decisions; financial planning; derivative securities, options, warrants, and convertibles; mergers, corporate control, and distress restructuring; international financial management.

MANA 804
Strategic Management
Three Credits
This course introduces doctoral students to the principal theoretical perspectives and analytical tools in complex case studies. It includes empirical findings in the strategic management process. The course explores diagnosing the firm's current situation and developing solutions to strategic and organizational problems. The perspective of the course is that of the general manager; the concern is how the organization builds sustainable competitive advantage in its respective industries. The primary focus is on understanding how the corporate level strategy adds value.

MANA 806
Organizational Design
Three Credits
This course is designed to train theorist/researchers, practitioners in the design, redesign and implementation of effective organizations. It will focus on the analysis, planning, implementation, and evaluation of both the social and technical systems of organizations, with emphasis on the structural changes necessary to improve and maintain productivity and the quality of work life. The course will emphasize the integration of diverse theoretical perspectives.

MANA 808
Business Consulting
Three Credits
This course provides an in-depth understanding of strategy consulting. The course explores dimensions of defining and understands the strategy consulting assignment, client relationship management, work methodology, and value creation, as well as presentation and follow-up. It examines individual, interpersonal, and organizational theories of development and of intervention effectiveness. It will develop students' understanding of how internal and external consultants add value to the organization.

MANA 810
Negotiation Strategies
Three Credits
The course deals with theory and research on effective negotiation strategies to build student understanding of, and skills for, managing differences and negotiation situations. The emphasis is on developing practical skills for effective negotiations that can be applied to real situations. Students should be prepared to learn from their own experiences and practice in this course.

MANA 820
Management of Innovations and Technology
Three Credits
The course centers on the importance of technology in organizations. This course considers the issues associated with introducing new technology into organizations and also covers the management of various types of technology and its role in the 21st Century organizations.

MANA 822
Project Management in Business
Three Credits
The course deals with skills and techniques in the project management field. With this body of knowledge students can help business organizations to meet their goals and expectations by using strategies to manage the process of planning, development, and control of projects.

MANA 824
Risk Management
Three Credits
The course centers on the comprehensive study of methods available for controlling risk and limiting financial exposure. Topics include insurance, underwriting, self-insurance, loss control, insurance fraud, workers compensation, government regulations and an examination of current issues in the insurance industry.

MANA 830
Advanced Human Resources Management
Three Credits
The course is centered on advanced studies in Human Resources Management. Topics include employee selection, performance appraisal, compensation, training and development, human resources policy and strategy, and others areas of human resource management.

MANA 832
Advanced Human Resources Management
Three Credits
The course covers roles of training and organizational development in the growth, development, and success of organizations. Organizational development is examined in terms of components and different types of interventions. Topics include development, instructional design, delivery, evaluation, and the determination of the return of investment (ROI).

MANA 834
Seminar in Leadership
Three Credits
The course deals with organizational leadership and its relationship to organizational development and change. This includes leadership and ethical behavior, inter and intra organizational leadership strategies, management theory and practice, and organizational culture.

MANA 840
Management in the Service Industry
Three Credits
The course is an overview of management principles applied in the service industry. It includes the application of management theories, effective characteristics, problems, communication, leadership, and particular management problems in service industries.

MANA 842
Entrepreneurship Management
Three Credits
The course explores the changing demands that a business places on the entrepreneur as it moves through growth. It also covers the skills, competencies and perspectives required to manage the organization. Special emphasis is placed on the process of developing the financial resources necessary for the growth of a venture. The course will help the student integrate prior learning to carry out analyses, considering strategic, operational, marketing and organizational dimensions of managing the venture.

MANA 844
Managing Professional Service Organization
Three Credits
This course addresses critical needs of professional services organizations. The course is valuable for those planning on entering professional service in a management role, including such activities as consulting, financial advice, accounting, the law, and other aspects of service industries.

MANA 850
Strategic Planning in Public Organizations
Three Credits
The course covers theory and practice of the Strategic Planning Paradigm as a tool for public administration. Students can learn how to apply strategic planning to mission and vision statements, environmental scanning, identification of strengths and weaknesses, strategic policies, and others.

MANA 852
Project Planning and Programming
Three Credits
Most of the public work is developed by projects and the use of specific budgets. In this course students will learn how to develop project planning and how to use different tools for the programming of projects, such as the Precedence Diagram Method (PDM), Arrow Diagramming Method (ADM), Conditional Diagramming Method (GERT), and Expert Judgment, among others.

MANA 854
Management and Budgeting in Government
Three Credits
The course covers theory of public management and budgeting spending, including past and present applications in the federal government and in Puerto Rico. The course also integrates experiences of management and budgeting in other countries, so that students can compare different scenarios.

MANA 857
Special Topics in Entrepreneurship and Management
Three Credits
This course is designed to promote the discussion of changing and emerging topics in the field that could not otherwise be effectively captured in the curriculum. Two alternatives are available: (1) lectures from visiting professors and (2) participation in international conferences or seminars. Visiting professors must prepare the course guidelines under the name Special Topics in Entrepreneurship and Management and a subtitle that refers to the topic. All proposed topics or participation in conferences must be approved by the DBA coordinator prior enrollment.

MANA 858
Environmental Management
Three Credits
This course examines the impact of environmental issues on organizational structure and operations from a management perspective. The students will be achieving a better understanding of the latest advances in economic theory and management science regarding environmental management.

MANA 832
Training & Human Resources Development
Three Credits
The course centers on the roles of training and organizational development in the growth, development, and success of organizations. Organizational development is examined in terms of its history, underlying assumptions, characteristics, components, and different types of interventions. Topics

include effective training, needs assessment, program development, instructional design, delivery, evaluation, and determination of the return of investment (ROI).

MARK 511 @
Marketing Management
Three Credits
The course is aimed at developing students' capability for analysis and decision-making in situations requiring verbal and written solutions to marketing problems. It includes the study of strategic marketing, segmentation, positioning, and target market. Also included is the study of information systems, marketing research, psychographics and demographic characteristics of consumers.

MARK 610 @
Advanced Marketing Management
Three Credits
The course centers on the study of marketing management through the use of quantitative analysis and marketing policy. Students will engage in a detailed analysis of the responsibilities of the distribution manager, including planning, organizing, directing, and coordinating the activities of personnel in charge of specialized tasks, such as promotion, sale management, and pricing.

Requisite: MARK 511

MARK 613
Sales Analysis and Forecasting
Three Credits
The course deals with analysis and forecast of sales by means of various techniques used by business and industry. Students become familiar with existing statistical models used in sales forecasting. The course relates forecasting activities to planning and inventory management.

Requisite: MARK 511

MARK 615 @
Advertising and Promotion
Three Credits
The course centers on analysis of problems related to marketing communications and promotions methods. It introduces basic concepts of management promotion, including institutional promotion and public relations.

Requisite: MARK 511

MARK 616 @
Public Relations
Three Credits
This course will examine the origins of public relations in the United States and Puerto Rico, including characteristics and functions of the public relations specialist. It also includes the ecology and environment in public relations; ethics of public relations (research, planning, communication, and evaluation); means of communication; importance of public opinion, as well as uses of promotion, advertising and propaganda within the perspective of the Puerto Rican social, economic, commercial, and political system.

MARK 618
Pricing Strategy
Three Credits
The course centers on the study of strategies used by profit and non-profit organizations in fixing the prices for their goods and services. It will examine the relationship between prices and demand for a product and between pricing and other variables which determine the "market mix".

Requisite: MARK 511

MARK 690
Green Marketing
Three Credits
This course attempt to discuss and analyze the strategies for the creation and develop green products and green businesses. The student should also learn the different possible strategies for the development of new markets in this area. In addition there implications of these differences for the consumer behavior and the markets.

Requisite: MARK 610

MARK 695
Sustainable Development
Three Credits
Discusses the three principal components of sustainable development (environment, society and economy) through a theory and practical discussion with the purpose of create conscience about the use of natural resources without to commit the capacity of future generations to satisfy their owns needs.

Requisite: MARK 610

MARK 703
Marketing Research
Three Credits
This course examines the use of the scientific method in the acquisition, analysis and interpretation of marketing information. Various research methods, such as exploratory, descriptive and experimental approaches will be examined. The most recent studies in the systematic gathering of internal and external information needed for making marketing decisions will be considered.

Requisite: Twenty-four or more completed credits plus MARK 610, MARK 708 and STAT 555

MARK 708 @
Consumer Behavior
Three Credits
The course examines the different theories applied to explanations of consumer behavior. An analysis is made of how the consumer acquires and uses information in making judgments. It takes into account the effects on consumer behavior of demographic characteristics, personality and social group. Knowledge of consumer behavior is applied to strategies for marketing. Emphasis of the course is on research.

Requisite: MARK 610

MARK 709
Distribution Channels
Three Credits
The course centers on analysis of management functions to administer the different market distribution channels in an organization.

Requisite: MARK 610

MARK 711
International Marketing
Three Credits
The course is a systematic study of the international market. It views the market on a global scale and discusses the advantages that this evaluation may represent for business enterprises. It provides the conceptual frame of reference and the analytical tools, which will enable the manager to explore the alternatives and possibilities on a world scale and to understand the diversity and complexity.

MARK 712
Sales Management
Three Credits
This course is designed to provide the student with the most advanced concepts in sales management. It includes principles and concepts such as planning, direction, implementation, and control of the sales area. It provides an opportunity for the student to analyze different cases and to present possible plans of action for each.

Requisite: MARK 511

MARK 713
New Product Development
Three Credits
The course in designed for the student to analyze the new product development processes and /or new services. We study the different stages as: Search market opportunities, proof of concept, product design, prototype development and the creation of the marketing mix to launch the product.

Requisite: MARK 610

MARK 714 @
Marketing Communications
Three Credits
The course centers on the study of the functions of publicity, personal sales, advertising, sales promotion, and public relations in accomplishing the marketing objectives of the organization.

Requisite: MARK 511

MARK 715
Services Marketing
Three Credits
Analysis of marketing strategies applied to services organizations. The student will understand the services nature and their implications of marketing strategy. The students will develop strategies to improvement the services.

Requisite: MARK 610

MARK 716
Industrial Marketing
Three Credits
Analysis of marketing strategies applied to business to business markets. Design of marketing strategies needs to success in business markets. The student manages concepts like client analysis, consumer behavior (business), buyer-seller relation and strategic management technics.

Requisite: MARK 610

MARK 718
Marketing Logistics
Three Credits
In this course we review the managerial decisions related to such fundamental logistics functions as customer service, transportation, inventory management, order processing and information system, warehousing, decision support systems, and the state of the art planning models and practical tools for integrating these functions into a total logistics system. After covering the basic logistics functions, the course focuses on their integration into supply chain processes or logistics networks. Consideration is given to supply chain design and management, including international issues. The orientation of the course is the marketing or physical distribution perspective, grounded in customer service philosophy as the driving force behind the design, implementation and, indeed, the performance of logistics systems or the entire supply chain.

Requisite: MARK 610

MARK 719
Knowledge Integration in Marketing
Three Credits

This course was developed to provide students of the Graduate Program in Human Resources the opportunity to examine and compare their knowledge with actual conditions in organizations. The student can identify, discuss and analyze in a critical way the concepts and theories in materials management, using real situations of different organizations. By practicing integrative analysis, students will be able to use knowledge acquired in their concentration courses.

MARK 720
Services Marketing II
Three Credits
Analysis of marketing strategies applied to financial services. The student will understand the core of financial services. The marketing strategy decisions implications. The student will develop marketing strategies to improve the financial services.

Requisite: MARK 610

MARK 725
e-Marketing
Three Credits
The goal of this course is to prepare students to be strategic decision makers in organizations (small or large) that are being impacted by the emerging digital technologies. The overall objective is to understand a broad range of E-Commerce tools and develop skills using Internet applications. Topics include e-commerce infrastructure, starting online business, developing promotional programs on the Internet, increasing traffic to web sites, and appreciation of the Internet as the future "Information Superhighway." Thus, a major aspect of this course will be the study of the Internet, its implications and its uses with principal focus of on understanding the managerial implications of E-Commerce and Internet Marketing.

Requisite: MARK 610

MARK 730
Sports Marketing
Three Credits
This course is designed to provide the student with an overview of the major marketing issues facing the sport industry. Course content focuses on developing basic knowledge and understanding of sport marketing and sponsorship of recreational and professional events. Attention is given to the history of sport marketing, principles of marketing applied to the sport industry, sport consumer behavior, research tools, corporate sponsorship, and evaluation of sport marketing programs. The components of the course include developing products, surveying, utilizing sponsorships, special events, fund raising, public relations, promotions, press releases and the utilization of radio and television networks.

Requisite: MARK 511

MARK 735
Special Events Marketing
Three Credits
Marketing strategies analysis to be use in the development and coordination of special events. Application of concepts of integrated marketing communication. The student will manage promotion strategies, exhibition and fairs. The student knowledge about business protocol.

Requisite: MARK 610

MARK 737 @
Concentration Test in Marketing
Three Credits
This course was designed to provide students the opportunity to integrate knowledge obtained in their concentration, to review the main theoretical concepts, and to take the specialty test to obtain the degree. During the course, the students must review both theoretical and practical concepts of their concentration. At the end of the course the student must take the concentration test.

Requisite: 27 or more credits approved including specialty courses

MARK 738 @
Knowledge Integration
Three Credits
This course was developed to provide to the students of the Graduate Program in Marketing, the opportunity to examine and compare their knowledge with the actual conditions of the organizations. The student can identify, discuss and analyze in a critical way the concepts and theories in management using real situations of different organizations. The analysis will be in an integrative way in which the student can use the knowledge acquired in their concentration courses.

Requisite: 27 or more credits approved including MANA 600

MARK 740 @
Marketing Seminar
Three Credits
The course promotes analysis of marketing problems faced by modern management. The course offers a critical discussion of activities such as planning, design strategy, and marketing decision-making. Under the professor's guidance, the student will identify a problem related to the marketing of a specific product or line of products of a company and develop a research paper on the selected problem.

Requisite: 27 or more credits approved including MANA 600

MARK 745
Political Marketing
Three Credits
Analysis of marketing strategies to the political environment. Study different political campaigns in Puerto Rico, United States and Europe. Study of possible reasons why certain strategies are more effective and their application in different environments.

Requisite: MARK 610

MATH 505
Quantitative Methods
Three Credits
The student is introduced to the analytical tools necessary for satisfactory performance in academic courses which require a quantitative background. Among the main topics considered are linear and nonlinear equations, radicals, combined analysis, and the binomial theorem, as well as an introduction to differential calculus. These topics are discussed from the perspective of their applications to business management.

QUMA 600
Six Sigma
Three Credits
This course presents the quality tools used in manufacturing and service organizations in order to achieve improvements in productivity.

QUMA 626
Teamwork Development
Three Credits
The course promotes discussion, analysis, and comparison of the principles of quality theories.

Requisite: MANA 501, STAT 555

QUMA 655
Quality Statistics
Three Credits
The course deals with statistical analysis applied to the quality process of the organization. Emphasis is placed on measuring the process of change and on effective decision-making.

Requisite: STAT 555 or equivalent

QUMA 727
Principles of International Quality Standards (ISO)
Three Credits
This course presents the basic principles for the establishment of international quality standards, interpretation of the different standards, requirements for different certifications, and the implantation of the programs.

QUMA 728
Total Quality in Human Resources
Three Credits
The course presents the application of the principles and practices of total quality in human resources, with a view to using human resources management to help in the transformation of the organization.

QUMA 729
Re-Engineering
Three Credits
The course promotes discussion, analysis, and application of tools, techniques, methods, models, and technology for transformation and re-engineering processes in the organization.

QUMA 733 @
Quality Management Seminar
Three Credits
In this course students will use knowledge they have obtained in their concentration to carry out research in the area of Quality in the company, under the instructor's supervision.
Requisite: 27 or more credits approved including MANA 600

RESM 850
Seminar in Information Systems I
Three Credits
The course deals with principles and methods of scientific business research applied to management decision-making. Students formulate hypotheses and relevant problems related to the social context in the workplace, and integrate the research questions with an adequate design. The course presents the basic methodology in business research, including experimental, non-experimental, descriptive research, and correlation. Emphasis is placed on critical evaluation of the limitations of every design in terms of internal and external validity.

Requisite: Advisor approval

RESM 860
Seminar in Information Systems II
Three Credits
The course covers fundamental techniques in business research, integrating the most effective research design in a changing environment. Topics include design, configuration, measurement scaling, and sampling. Quantitative research using survey instruments focuses strictly on qualitative research data collection procedures. Issues of planning for data analysis, model building, and the data analysis process in light of current developments in the field of modeling will

be discussed. It also deals with the issues of research reporting and evaluation, as well as contemporary ethical considerations in business research.

Requisite: Advisor approval

RESM 862
Seminar in Management I
Three Credits
The course deals with principles and methods of scientific business research applied to management decision-making. The students formulate hypotheses and relevant problems related to the social context in the workplace, and integrate the research questions with an adequate design. The course presents the basic methodology in business research, including experimental, non-experimental, descriptive research, and correlation. Emphasis is placed on critical evaluation of the limitations of every design in terms of internal and external validity.

Requisite: Advisor approval

RESM 864
Seminar in Management II
Three Credits
The course covers fundamental techniques in business research, integrating the most effective research design in a changing environment. Topics include design, configuration, measurement scaling and sampling. Quantitative research using survey instruments focuses strictly on qualitative research data collection procedures. Issues of planning for data analysis, model building and the data analysis process in light of current developments in the field of modeling will be discussed. The course also deals with the issues of research reporting and evaluation, as well as contemporary ethical considerations in business research.

Requisite: Advisor approval

RESM 866
Dissertation I
Three Credits
This is the first of two required courses on dissertation writing and was designed to help the student to produce a research proposal. This research proposal must have at least three (3) chapters as follows: Problem statement, Literature review and Methodology. This proposal should be the input for the second dissertation course.

Requisite: Comprehensive Test

RESM 867
Continuation of Dissertation I
Cero Credits
This is the continuation of the first of two required courses of dissertation writing and was designed to help the student to produce a research proposal. This research proposal must have at least three (3) chapters as follows: Problem statement, Literature review and Methodology. This proposal after approval by the Dissertation Proposal Committee will be the input for the second dissertation course.

Requisite: RESM 866

RESM 868
Dissertation II
Three Credits
This is the second of the two required courses on dissertation writing. This document produced must be the result of the research developed by the student and must comply with the requirements established in the Dissertation Manual of the School of Business. This course should end with the student's oral defense of the dissertation.

Requisite: RESM 866

STAT 555 @
Statistics for Decision-Making
Three Credits
The course centers on the study of concepts and statistical methods useful to administrators in their decision-making processes. The course covers descriptive statistics and inferential statistics. Computer applications are part of the course.

SCHOOL OF EDUCATION

Vision of the School of Education

In collaboration with the broader Universidad del Turabo 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, student-centered 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.

Mission of the School of Education

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. At the graduate level, it offers master degree programs in Education and Physical Education geared to preparing, administrators, school librarians, counselors, curriculum specialists, master teachers as well as specialized physical education professionals in varied fields. The School also offers a doctoral degree with specializations in Educational Leadership and Curriculum, Teaching and Learning Environments. 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 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.

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 institutions 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

Goal and Objectives of the Graduate Program

- The goal of the Graduate Program in Education is to provide a diverse group of men and women with the theoretical and practical knowledge, skills, work ethic, vision and innovative spirit needed to become leaders in the educational enterprise.

- The academic experiences provided by the Graduate Program will enable the students to:
  1. Conceptualize the educational process from a broad perspective that will contribute to the fulfillment of their duties with ethics, competence and professional commitment.
  2. Apply research to the solution of educational problems in their respective programs.
  3. Acquire the theoretical and conceptual knowledge needed to be effective as educational leaders.
  4. Develop professional knowledge, technical skills and attitudes needed to design, implement and evaluate educational experiences in their particular programs

STAFF

Israel Rodríguez-Rivera / Dean

Jorge Garófalo-Pastrana / Associate Dean for Physical Education, Recreation and Sports

Brenda Arroyo / Associate Dean Undergraduate Programs

Maritza Oyola / Associate Dean for Student Services

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EdD, New York University

Debra A. Zumaeta / Lecturer
EdD, University of Puerto Rico

ACADEMIC OFFERINGS

The Graduate Program's academic offerings include a master's degree in education with the following specializations: Educational Administration, Teaching English as a Second Language, Bilingual Education, Curriculum and Teaching, Special Education, Library Services and Information Technology, Guidance and Counseling, Primary School Teaching and Teaching of Fine Arts. The Program also offers a master's degree in Physical Education.

It is recommended for students to verify the Puerto Rico Department of Education Teacher Certification Regulations to make sure they are taking the right courses according to the requirements for the certification in which they are interested.

The Comprehensive Exam is a graduation requirement of the Graduate Program. The course EDUC 604 can substitute this test.

MASTER'S DEGREE

Educational Administration

This specialty prepares candidates to be certified as educational administrators in public and private schools.

Total Credits	**39**
Core Courses	**6**
Required Specialization Courses	**24**
Research Courses	**9**

Core Courses		**(6 credits)**
EDUC 501	Principles and Development of Curriculum	3
EDUC 504	Leadership, Communication and Teamwork	3

Required Specialization Courses		**(24 credits)**
EDUC 503	Introduction to the Educational Enterprise	3
EDUC 506	Conflict Resolution in Schools	3
EDUC 510	Principles of Educational Management	3
EDUC 702	Administration of Financial Resources	3
EDUC 520	Educational Law and Regulation	3
EDUC 705	Planning and Evaluation in Education	3
EDUC 519	Human Resources Management in the Educational Enterprise	3
EDUC 515	Practicum in School Administration and Supervision	3

Research Courses		**(9 credits)**
EDUC 600	Educational Research Methods	3
EDUC 630	Statistics for Educational Research	3
EDUC 602	Lecture Seminar	3
or		
EDUC 617	Research Project in a School Setting	3

Teaching English as a Second Language

This specialty is designed to provide candidates with a background in the principles, theories and practice of second language acquisition, learning and teaching. It seeks to prepare educators who can assume positions of leadership in ESL education as teachers or English supervisors in public or private schools and as professors in institutions of higher education.

Total Credits	**39**
Core Courses	**9**
Required Specialization Courses	**24**
Research Courses	**9**

Core Courses		**(9 credits)**
EDUC 501	Principles and Development of Curriculum	3
EDUC 504	Leadership, Communications and Teamwork	3
EDUC 619	Professional Experiences Seminar	3

Required Specialization Courses		**(21 credits)**
EDUC 550	Second Language Acquisition	3
EDUC 551	Reading Processes in Second Language Settings	3
EDUC 553	Language, Cognition and ESL Curriculum Development	3
EDUC 554	Use of Computers in ESL Teaching	3
EDUC 564	Applied Linguistics for ESL Teachers	3
EDUC 566	Methods of Teaching English as a Second Language	3
EDUC 704	The Teaching of Writing: From Theory to Practice	3

Research Courses		**(9 credits)**
EDUC 600	Educational Research Methods	3
EDUC 630	Statistics for Educational Research	3
EDUC 602	Lecture Seminar	3
or		
EDUC 617	Research Project in a School Setting	3

Counseling

This program has been designed to prepare candidates interested in becoming counselors in diverse occupational scenarios such as schools, universities, government agencies or private corporations.

Total Credits	**48**
Core Courses	**24**
Required Specialization Courses	**12**
Research Courses	**9**
Electives	**3**

Required Specialization Courses		**(24 credits)**
EDUC 580	Evaluative Psychology: Human Growth and Development	3
EDUC 581	Introduction to Counseling	3
EDUC 582	Legal and Ethical Issues in Counseling	3
EDUC 583	Instruments and Techniques for Diagnosis and Assessment	3
EDUC 584	Individual Counseling Techniques	3
EDUC 585	Group Counseling Techniques	3
EDUC 586	Career Counseling	3
EDUC 587	Internship	3

School Counseling		**(12 credits)**
EDUC 645	Introduction to School Counseling	3
EDUC 646	Development and Management of School Counseling Programs	3
EDUC 618	Children and Adolescents Counseling	3
EDUC 648	Practicum in School Counseling	3

Student Affairs on Higher Education		**(12 credits)**
EDUC 649	Counseling in Students Affairs in Higher Education	3
EDUC 650	Counseling for Students Development in Higher Education	3
EDUC 651	Counseling for Prevention in Higher Education: The College Students Experiences	3
EDUC 652	Practicum in Counseling in Students Affairs in Higher Education	3

Research Courses		**(9 credits)**
EDUC 600	Educational Research Methods	3
EDUC 630	Statistics for Educational Research	3
EDUC 602	Lecture Seminar	3
or		
EDUC 617	Research Project in a School Setting	3

Electives **(3 credits)**

Teaching of Fine Arts

This program has been designed as a professional development alternative for Fine Arts teachers. Candidates can select one of four track options: Music, Dance, Visual Arts or Theater.

Total Credits	**39**
Core Courses	**6**
Required Specialization Courses	**12**
Additional Specialization Courses	**12**
Research Courses	**9**

Core Courses		**(6 credits)**
EDUC 501	Principles and Development of Curriculum	3
EDUC 504	Leadership, Communication and Teamwork	3

Required Specialization Courses (12 credits)

EDUC 540	Theories, Strategies & Resources for Teaching Fine Arts	3
EDUC 541	Use of Technology in the Teaching of Fine Arts	3
EDUC 542	Integration of Fine Arts in the Secondary School Curriculum	3
or		
EDUC 592	Integration of Fine Arts in the Elementary School Curriculum	3
MSAA 701	Basic Principles of Administration of the Arts	3

Option I – Music

EDUC 557	Organization of Vocal Music Groups	3
EDUC 558	Music Production Seminar	3
EDUC 559	Techniques for the Organization of Instrumental Groups	3
EDUC 612	Music Seminars/Workshops	3
EDUC 613	Music Seminars/Workshops	
EDUC 614	Music Seminars/Workshops	

Option II – Dance

EDUC 571	Seminar for Dance Production: Body Movement & Expression	3
EDUC 572	Development and Evolution of Dance	3
EDUC 573	Methodologies and Integration of Dance to Elementary School Teaching	3
EDUC 623	Dance Seminars/Workshops	3
EDUC 624	Dance Seminars/Workshops	
EDUC 625	Dance Seminars/Workshops	

Option III – Visual Arts

MSAA710	Administration of Museums	3
EDUC 543	Media, Techniques and Materials in the Visual Arts	3
EDUC 544	Visual Arts Production Seminar	3
EDUC 609	Visual Arts Seminars/Workshops	3
EDUC 610	Visual Arts Seminars/Workshops	
EDUC 611	Visual Arts Seminars/Workshops	

Track Option IV – Theater

MSAA 709	Administration of Representational Arts	3
EDUC 574	Theatrical Techniques	3
EDUC 576	Theater Production Seminar	3
EDUC 620	Theater Seminars/Workshops	3
EDUC 621	Theater Seminars/Workshops	
EDUC 622	Theater Seminars/Workshops	

Research Courses (9 credits)

EDUC 600	Educational Research Methods	3
EDUC 630	Statistics for Educational Research	3
EDUC 602	Lecture Seminar	3
or		
EDUC 617	Research Project in a School Setting	3

Curriculum and Teaching

This program has been designed for candidates interested in a professional development alternative that will further enhance their teaching skills. The program allows candidates to take nine (9) credits in a discipline suitable for their needs and interests. Students can choose between two options: Environmental Science and Reading.

Total Credits	**39**
Core Courses	**18**
Required Specialization Courses	**12**
Research Courses	**9**

Core Courses (18 credits)

EDUC 500	Learning Theories	3
EDUC 501	Principles and Development of Curriculum	3
EDUC 504	Leadership, Communication and Teamwork	3
EDUC 505	Models and Systems of teaching	3
EDUC 705	Planning and Evaluation in Education	3

Required Specialization Courses (12 credits)

Elementary School Teaching

EDUC 561	Computer Applications for Teaching	3
EDUC 597	Social Sciences Curriculum and Methodology	3
EDUC 598	Science Teaching at Elementary Level	3
EDUC 599	Math Teaching at Elementary Level	3

Environmental Sciences

ENSC 500	Fundamentals of Environmental Sciences	3
BIOL 615	Environmental Industrial Microbiology	3
BIOL 619	Microbial Ecology	3
GEOL 607	Environmental Geology	3

Reading/Writing

EDUC 521	Use of Technology in the Teaching of Reading and Writing	3
EDUC 547	Language Development and Acquisition: Implications for Learning to Read and Write	3
EDUC 560	Principles and processes for the teaching of reading	3
EDUC 590	Methods of Reading Diagnosis and Assessment	3
EDUC 595	Integration of Reading into Content Area Curriculum	3
EDUC 596	Whole Language and the Development of Reading/Writing Processes	3
EDUC 608	Special Project in Reading	3

Educational Technology and Distance Education

EDUC 640	Instructional Design Principles	3
EDUC 641	Educational Technology Foundations	3
EDUC 642	Instructional Media	3
EDUC 643	Distance Education Foundations	3

Research Courses		**(9 credits)**
EDUC 600	Educational Research Methods	3
EDUC 630	Statistics for Educational Research	3
EDUC 602	Lecture Seminar	3
or		
EDUC 617	Research Project in a School Setting	3

Elective Courses **(3 credits)**

Special Education

This program has been designed for the professional development of special education teachers. Candidates will acquire knowledge, skills and dispositions needed to assume leadership positions as teachers, supervisors, or consultants in the field of special education.*

*To be certified as a special education teacher (alternate route) students should take 6 credits in Methodology for Teaching Reading skills and 3 credits in the Teaching of Mathematics. It is recommended that students take EDUC 596, EDUC 534 and EDUC 535.

Total Credits	**39**
Required Specialization Courses	**18**
Additional Specialization Courses	**15**
Research Courses	**9**

Required Specialization Courses		**(15 credits)**
EDUC 530	Psychosocial and Educational Implications of the Birth or Upbringing of Handicapped Students	3
EDUC 535	Inclusion and the Special Education Work Team	3
EDUC 539	Assessment and Instructional Design for the Teaching of Students with Disabilities	3
EDUC 546	Assistive Technology in the Special Education Field	3
EDUC 580	Human Growth and Development	3

Additional Specialization Courses		**(15 credits)**
Option I – Autism		
EDUC 653	Nature and psychosocial aspects of students with autism	3
EDUC 654	Methods of communication in the child with autism	3
EDUC 655	Behavior management of students with autism	3
EDUC 656	Methodology for teaching autistics students	3
EDUC 657	Evaluation of children with autism	3
Option II – Special Education K-12		
EDUC 658	Physical disabilities and health impairment in childhood and adolescence	3
EDUC 659	Sensory problems in childhood and adolescence	3
EDUC 660	The education of children and youth with cognitive	3
EDUC 661	Emotional disorders in childhood and adolescence	3
EDUC 662	Transitional process for special education students	3

Research Courses		**(9 credits)**
EDUC 600	Educational Research Methods	3
EDUC 630	Statistics for Educational Research	3
EDUC 602	Lecture Seminar	3
or		
EDUC 617	Research Project in a School Setting	3

Physical Education

This program has been designed for the professional development of candidates interested in working in diverse sports and physical education scenarios. Candidates can select one of three different track options: Athletic Training, Health Promotion or Coaching.

Total Credits	**39**
Core Courses	**3**
Required Specialization Courses	**15**
Required Specialization Courses by Options	**12**
Research Courses	**9**

Core Courses		**(3 credits)**
EDUC 504	Leadership, Communication and Teamwork	3

Required Specialization Courses		**(15 credits)**
PHED 500	Advanced Evaluation and Care of Athletic Injuries I	3
PHED 501	Physiology of Exercise I	3
PHED 502	Applied Sports Psychology: A Bio-Psychosocial Approach	3
PHED 503	Theory and Methodology of Coaching	3
PHED 504	Sports Law & Physical Education	3

Required Specialization Courses by Options		**(12 credits)**
Option I: Coaching		
PHED 505	Biomechanical and Metrological Aspects of Exercise	3
PHED 506	Physiology of Exercise II	3
PHED 507	Training and Competitive Sports Psychology	3
PHED 508	Analysis and Interpretation of Data in Sports Performance	3
Option II: Health Promotion		
PHED 509	Nutrition for Health Fitness	3
PHED 510	Critical Issues in Health Fitness Management	3

PHED 511	Assessment and Evaluation of Health Fitness Parameters	3
PHED 512	Strategic Planning in Health Promotion	3

Option III: Athletic Training

PHED 513	Administrative Issues in Athletic Training	3
PHED 514	Athletic Injuries Rehabilitation	3
PHED 515	Athletic Training I	3
PHED 516	Advanced Evaluation and Care of Athletic Injuries II	3

Research Courses **(9 credits)**

EDUC 600	Educational Research Methods	3
EDUC 630	Statistics for Educational Research	3
EDUC 602	Lecture Seminar	3
or		
EDUC 617	Research Project in a School Setting	3

DOCTORAL PROGRAM

The doctoral program in education has been designed to enable teachers, college professors, community advocates and educational administrators to work in their respective communities while simultaneously developing new leadership skills and acquiring postgraduate training. The program allows students to strategically confront the complex realities and challenges facing educational institutions and examine them from a broad-base systems perspective.

The School of Education takes great pride in being responsive to student initiatives and individual needs. Thus, in the doctoral programs learning is interactive, collaborative and competency-based, grounded in mutual respect among learner, faculty and the institution. The learning model of the program is based on the principles of adult learning and designed to accommodate the needs, requirements and learning styles of adult professionals.

Students in the doctoral degree programs will learn through a combination of structured course work and independent study. They will learn working collaboratively with peers and faculty. They will utilize a range of learning media, including face-to-face seminars, web-enhanced courses and electronic e-mail. This flexibility in learning modalities will emphasize academic understanding, research and writing skills and applied activities.

The faculty of the School of Education works together in presenting an integrated curriculum, involving students through research, case analysis, group projects, integrative experiences and cooperative learning. Learning is an interactive process, thus integration, student participation and teamwork will be reflected consistently in all courses.

The doctoral program includes the following specializations: Educational Leadership and Teaching, Curriculum and Learning Environment.

The curriculum consists of four elements. First, students will engage in the disciplined and critical study of the social context that has special relevance to education. Throughout the program, students will refer to this social context as background to analyze critical problems of practice. Second, students will analyze theories and acquire technical and professional skills in their respective specializations. Third, students will acquire and apply knowledge in research methodology to identify and analyze educational problems. Finally, through the dissertation, students will develop and exhibit abilities to engage in sustained research.

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PhD, Fordham University

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PhD, Pennsylvania State University

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EdD, Touro University (California)

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EdD, Nova University

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DOCTORAL DEGREES

EDUCATIONAL LEADERSHIP

Mission
To develop and enhance educational leaders who are dynamic, reflective, collaborative and highly effective.

Goal
To provide educational experiences that will enable individuals to develop their leadership potential and expand knowledge related to their vocational duties and aspirations.

Objectives

- Develop and enhance a body of knowledge and skills that will enable the student to study and analyze the social context of educational organizations.
- Develop the knowledge and skills to manage an educational project from the conception of an idea to its completion.
- Acquire financial knowledge and skills needed to manage an educational institution's income and expense accounts appropriately.
- Study the current and emerging theories and applications used for the evaluation of instructional programs.
- Identify, examine and analyze different leadership styles, models and strategies.
- Study and examine current practices of instructional leadership in different types of educational organizations.
- Develop knowledge and skills that will enable the student to take a leadership role in the process of transforming educational systems.
- Develop the disposition to collaborate and establish community relations and strategies that will result in developing collaborative partnerships to transform educational organizations.
- Enrich and enhance educational technology skills to be applied in leadership roles as well as for personal development.
- Develop knowledge and skills that will enable educational leaders to successfully utilize research for solving educational situations in their organizations.
- Use statistics and methods of data collection for the interpretation and analysis of information.
- Develop the skills to conceptualize, initiate, develop and carry out research related to educational leadership.
- Use technology and information systems to improve educational processes.
- Develop the disposition to act deliberately, ethically and skillfully within the evolving realities of contemporary educational institutions.
- Develop the disposition to motivate and facilitate others to achieve educational excellence.

Total Courses	**51 credits**
Social Context of Education Component	**9 credits**
Specialization Courses	**27 credits**
Research Courses	**15 credits**

Social Context of Education Component (9 credits)
Select three of the following courses:

EDUC 714	Historical and Philosophical Perspectives in Education	3
EDUC 715	Social, Cultural and Political Dimensions of Educational Organizations	3
EDUC 716	Contemporary Problems and Issues	3

EDUC 717*	Legal Issues in Education	3
EDUC 718	Ethics and Education	3

*Students whose prior academic concentration is not education, should take 3 additional credits in the Social Context of Education: EDUC 717.

Specialization Courses (27 credits)

Organizational Processes (9 credits)

EDUC 801	Project Management in Education	3
EDUC 802	School Finance	3
EDUC 803	Evaluation of Instructional Programs: Theory and Application	3

Leadership (12 credits)

EDUC 804	Leadership: Models and Strategies	3
EDUC 805	Instructional Leadership	3
EDUC 806	Leading Organizational Change	3
EDUC 807	Leadership, Community Relations and Partnerships	3

Elective Courses (6 credits)

The student may select any of the courses available in the Doctoral Program. In order to select a course from the Librarian and Information Systems option, students must have prior academic preparation in this concentration.

Research Courses

EDUC 901	Research Methods in Education	3
EDUC 902	Statistics	3
EDUC 905	Dissertation II	3
EDUC 906	Dissertation II	3
EDUC 906	Dissertation III	3

TEACHING, CURRICULUM AND LEARNING ENVIRONMENT

Mission

To develop and enhance dynamic, reflective, collaborative, and highly effective educational practitioners in various areas of expertise.

GOALS

- To provide a diverse group of men and women with the theoretical and practical knowledge, skills, work ethic, vision and innovative spirit needed to become leaders in the educational enterprise.
- To provide educational experiences that will enable individuals to develop further competencies of professional leadership and knowledge related to their vocational duties and aspirations.
- To prepare skilled professionals in the education professions to contribute effectively in a pluralistic society.

OBJECTIVES

- Develop and enhance a body of knowledge and skills that will enable the student to study and analyze the social context of educational organizations.
- Examine theoretical and empirical research on human learning and information processing.
- Analyze current research on learning styles and models of teaching.
- Study and analyze principles and theoretical assumptions underlying curriculum and instructional design.
- Identify, examine and analyze the influence of interest groups on curriculum planning and development.
- Study current and emerging theories and applications for the evaluation of instructional programs.
- Utilize theory and applications of instructional systems design in the planning of instructional programs.
- Acquire new knowledge and skills that will enhance the graduate's educational practice in a particular learning environment.
- Develop knowledge and skills that will enable the graduate to successfully utilize research for the resolution of educational situations in their organizations.
- Develop the skills to conceptualize, initiate, develop and carry out research related to his/her area of expertise.
- Develop knowledge and skills that will enable the graduate to become an effective educational practitioner in a particular learning environment.
- Develop knowledge and skills that will enable the graduate to successfully utilize research for the resolution of educational situations in their organizations.
- Use statistics and methods of data collection for the interpretation of analysis of information.
- Develop the disposition to collaborate with the community, educational institutions and agencies to promote the highest quality of education for children and adults.
- Use technology and information systems to improve educational processes.
- Develop the disposition to respect and address individual differences and diverse learning environments as integral parts of the educational experience.

- Develop the dispositions to act deliberately, ethically and skillfully within the evolving realities of contemporary educational institutions.

Total Courses	**51 credits**
Social Context of Education Component	**9 credits**
Specialization Courses	**27 credits**
Research Courses	**15 credits**

Social Context of Education Component (9 credits)
Select three of the following courses:

EDUC 714	Historical and Philosophical Perspectives in Education	3
EDUC 715*	Social, Cultural and Political Dimensions of Educational Organizations	3
EDUC 716	Contemporary Problems & Issues	3
EDUC 717	Legal Issues in Education	3
EDUC 718	Ethics and Education	3

*Students whose prior academic concentration is not education, should take 3 additional credits on the social Context of Education: EDUC 715.

Specialization (27 credits)

Teaching (9 credits)

EDUC 809	Instructional Systems Design	3
EDUC 812	Teaching, Learning, and Cognition	3
EDUC 813	Models and Styles of Teaching and Learning	3

Curriculum (9 credits)

EDUC 803	Evaluation of Instructional Programs: Theory and Application	3
EDUC 814	Curriculum Theory and Design	3
EDUC 815	Curriculum Planning and Development	3

Learning Environments (9 credits)
Select three courses of one of the following options track:

Option A: Special Education

EDUC 816	Creating Learning Environments for Diverse Students	3
EDUC 817	Behavior Modification in the Classroom	3
EDUC 818	Early Identification of At-Risk Students	3
EDUC 828*	Seminar and Practicum in University Curriculum and Teaching	3

Option B: Second Language Acquisition

EDUC 819	Language Development Issues in the Curriculum of Puerto Rico´s Public and Private Schools	3
EDUC 820	Teaching in Multicultural Environments	3
EDUC 821	Research on Second Language Acquisition and Bilingualism	3
EDUC 828*	Seminar and Practicum in University Curriculum and Teaching	3

Option C: Technology and Education

EDUC 808	Educational Technology	3
EDUC 810	Technology and Media in Education and Training	3
EDUC 811	Theory and Practice of distance Education	3
EDUC 828*	Seminar and Practicum in University Curriculum and Teaching	3

Option D: Library and Information Systems

EDUC 822	Electronic Databases and Information Systems	3
EDUC 823	Advanced Organization of Bibliographic Resources	3
EDUC 824	Seminar: Special Topics in Librarian and Information systems	3
EDUC 828*	Seminar and Practicum in University Curriculum and Teaching	3

OPTION E: Arts, Culture and Education

EDUC 825	Anthropological and Cultural Concepts in the Puerto Rican Curriculum	3
EDUC 826	Educational Research on the Teaching of Fine Arts and Popular Arts	3
EDUC 827	Artistic and Cultural Expressions in Latin America and the Caribbean	3
EDUC 828	Seminar and Practicum in University Curriculum and Teaching	3

OPTION F: Children, Families and Society

EDUC 720	Contemporary Theories of Child Development	3
EDUC 721	Teaching at the Pre-School/Primary Level Trends & Innovations	3
EDUC 722	Qualitative Research in Children's Education	3
EDUC 828	Seminar and Practicum in University Curriculum and Teaching	3

OPTION G: Higher Education

EDUC 723	Organization and Governance on Higher Education	3
EDUC 724	Student Services on Higher Education Institutions	3
EDUC 800	Higher Education Leadership and Administration	3
EDUC 828	Seminar and Practicum in University Curriculum and Teaching	3

Research Courses (15 credits)

EDUC 901	Research Methods in Education	3
EDUC 902	Statistical Methodology in Education	3
EDUC 903	Descriptive Research methods	3
or		
EDUC 904	Experimental Research Methods	3
EDUC 905	Dissertation I	3
EDUC 906	Dissertation II	3

*EDUC 828 is a one-semester course.

COURSE DESCRIPTIONS

EDUC 500
Learning Theories
Three Credits
The course centers on the study of the most important theories of learning, knowledge acquisition, and information processing. Special emphasis is given to the application of theory to enhance the learning-teaching process.

EDUC 501
Principles and Development of Curriculum
Three Credits
The course promotes the critical analysis of curriculum development theories, beginning with the various educational philosophies and their relation to the practical aspects of curriculum development. Various models exemplifying different curriculum theories are presented and analyzed. It also examines the curriculum model presently being used in the Department of Education of Puerto Rico. Students will have the opportunity to examine and evaluate specific curriculum projects.

EDUC 502
Administration of Classrooms and Schools as Academic Communities
Three Credits
The course centers on the study and critical analysis of classrooms and schools as academic communities. It emphasizes discussion of topics such as restructuring of the education system, classrooms as laboratories, decentralization, total quality management, school autonomy, open school system and instructional leadership.

EDUC 503
Introduction to the Educational Enterprise
Three Credits
The course deals with the analysis of concepts, philosophical bases, theories and research that impact contemporary educational practices. Emphasis is given to educational innovations in the U.S.A. and Puerto Rico.

EDUC 504
Leadership, Communications and Teamwork
Three Credits
The course centers on the study and analysis of leadership concepts and practices, communication and teamwork as applied to the role of educators.

EDUC 505
Models and Systems of Teaching
Three Credits
The course centers on the analysis of models and systems of teaching, instructional methods and strategies. Emphasis on cognitive development, learning styles and teaching models as adapted to students' needs.

EDUC 506
Conflict Resolution in Schools
Three Credits
This course focuses on the knowledge, skills and abilities required to design, implement and evaluate effective conflict resolution programs in schools. Students will get acquainted with the following concepts: inter and intrapersonal conflict resolution, persuasion, problem solving and decision making in conflict in diverse organizations and will develop strategies that could address these conflicts.

EDUC 508
Total Quality Management in Education
Three Credits
The course focuses on the study and analysis of the total quality management theory applied to education. It includes the study of principles such as quality of services and product, teamwork, decentralized management, trust, and commitment.

EDUC 510
Fundamental Concepts of Educational Management
Three Credits
This is an introductory course in which the development of managerial thinking in this century is analyzed, and the new focus of managerial education for the autonomous school of the twenty-first century is discussed.

EDUC 511
Strategies and Alternatives in Educational Administration and Supervision in the Elementary School
Three Credits
The course focuses on the study of systems and methods of administration, supervision and school management. It includes experiences in case studies, simulation and role-playing in the application of various organizational theories related to areas of vital importance for school administrators and supervisors. Special emphasis is given to the role and responsibilities of the elementary school administrator.

EDUC 512
Educational Innovations and Strategies
Three Credits
The course centers on the study and analysis of educational innovations in school administration and supervision and on the teaching and learning process. It considers innovations and new educational strategies being implemented in the United States and other countries. Emphasis is also given to practices being developed in the public and private educational systems of Puerto Rico.

EDUC 513
Educational Measurement and Evaluation
Three Credits
The course focuses on the study of techniques of measurement and evaluation applied to the teaching process. Emphasis is placed on the adequate planning for evaluation and other teaching evaluation instruments.

EDUC 514
Methods and Techniques of Educational Supervision
Three Credits
The course focuses on the study of the various practices and techniques of school supervision. The course emphasizes knowledge of different supervision models and the analysis and application of instruments for evaluating the effectiveness of the teaching-learning process.

EDUC 515
Practicum in School Administration and Supervision
Three Credits
The course consists of a series of field experiences encompassing all the tasks and functions of school administrators and supervisors. This provides students with the opportunity to apply theories of school administration and supervision. The student is placed in an educational institution, which serves him/her as a laboratory to carry out the administrative tasks required of school administrators. In addition to the supervised practice in a teaching center, the student must attend meetings with the practicum supervisor.

EDUC 516
Strategies and Alternatives in Educational Administration and Supervision in the Secondary School
Three Credits
The course focuses on the study of the systems and methods of administration, supervision and school management. It includes experiences in case studies, simulation and role-playing in the application of various organizational theories related to areas of vital importance for school administrators and supervisors. Special emphasis is given to the role and responsibilities of the secondary school administrator.

EDUC 518
Special Education Practicum
Three Credits
The course is a clinical experience for the student interested in a Special Education certification from the Department of the Education. During this practicum, the student assumes responsibility for designing and administering a special education program in a school district under the direct supervision of the special education area supervisor for that district.

EDUC 519
Human Resources Management
Three Credits
The course focuses on analyzing theories and practices of human resources management in educational settings. Emphasis is placed on human resources management cycles: planning, recruitment, selection, training, development, evaluation and compensation, especially as applied in the Puerto Rico Department of Education. Other topics discussed are motivation, communication and human resources legislation that apply to educational enterprises in Puerto Rico and the United States.

EDUC 520
Educational Laws and Regulations
Three Credits
The course focuses on the study and analysis of the legal aspects that regulate the educational process in Puerto Rico.

EDUC 521
The Use of Technology in the Teaching of Reading and Writing
Three Credits
The course provides an opportunity to explore, practice and handle different technologies available for the teaching of reading and writing in elementary and secondary schools. It includes discussion of ethical and legal issues concerning the use of the available technology for teaching of reading and writing.

EDUC 522
The World of Information Sciences, Computers and the School Library
Three Credits
The course focuses on the study of information sciences and the importance of the school library in this context. It includes an introduction to the use of computers in storage handling and information access. The course includes workshops in the use of microcomputers.

EDUC 523
School Library Management: Its Role in Curriculum Development
Three Credits
The course deals with principles of school library management. It includes an overview of theories and models for curriculum development and applications for libraries. Emphasis will be placed on strategies for integrating the school library into the curriculum and to the role of the school librarian in this process.

EDUC 524
Reference and Information Services
Three Credits
The course deals with processes related to reference services in the school library. Emphasis is placed on the integration of reference services to the student's learning processes. It includes topics such as: interviews with users, information search strategies, reference sources, information and referral services and the evaluation of reference services.

EDUC 525
Production and Use of Audiovisual Media
Three Credits
The course focuses on processes, equipment and materials related to the use of audiovisual media in libraries. Emphasis is placed on the integration of media to the teaching-learning process. Topics include production techniques, as well as selection and use of media.

EDUC 526
Organization of Bibliographical Resources
Three Credits
The course covers principles of bibliographical organization as an important factor for locating information. Different classification systems, including computerized systems, will be studied and analyzed.

EDUC 527
Development of Bibliographical Collections
Three Credits
The course deals with policies for the development of a bibliographical collection, and the process of selection, acquisition, and evaluation of the collection. Mechanisms for sharing resources, book markets, intellectual freedom and censorship are also discussed in this course.

EDUC 528
Library Services for Children and Adolescents
Three Credits
The course focuses on characteristics of children and adolescents and their implications for school library services. Strategies for assessing needs and interests, as well as activities and services appropriate for this population, will be discussed. Emphasis is placed on information skills, critical thinking and reading programs.

EDUC 529*
Clinical Experiences in the School Library
Three Credits
The course offers practical experience in offering school library services, in coordination with the classroom teacher. Students will coordinate reading orientation and development of information and critical thinking skills program activities. Students will apply knowledge and skills acquired in their program of studies in the coordination of reading orientation and development of information and critical thinking program activities.

*Students enrolled in the Administration of School Libraries program, who do not have experience as school libraries must take this course to comply with certification.

EDUC 530
Psychosocial and Educational Implications of a Handicapped Student: Family, Society, Services, and Education.
Three Credits
The course focuses on the discussion and analysis of the impact of a student with physical, mental, emotional, and multiple handicaps in the family, society, and educational systems. Family and social systems will be studied in order to understand both systems' bi-directional influence in the lives of students with handicaps. The course includes discussion of the different psychological processes involved in managing a student with handicaps in family and educational systems. Professional collaboration and the educational possibilities, including transition services, across a variety of handicaps, will be studied.

EDUC 532
Special Education Administration
Three Credits
This course analyzes the processes and practices in the administration of special education programs. Students will examine the rendering of educational and complimentary services of special education within the context of mainstreaming and a nonrestrictive environment. Emphasis is placed on laws that regulate the rendering of such services, the problems inherent in complying with these laws, and the administrative practices related to them.

EDUC 534
Diagnosis and Teaching Methodology of the Student with Specific Learning Disabilities
Three Credits
The course centers on an in-depth study of specific learning disabilities, including their incidence, characteristics, evaluation procedures, and prognosis. Research regarding learning disabilities diagnosis procedures and teaching strategies will be presented and analyzed as the scientific basis for educational program preparation. Students will learn multidimensional assessment techniques and procedures available for students with specific learning disabilities. Current practices in educational planning, classroom management and the processes of reading, writing, and performing mathematical procedures will be stressed. Involvement, roles, and responsibilities of family and other professionals will be discussed.

EDUC 535
Inclusion and the Special Education Work Team
Three Credits
The philosophy of inclusion is presented, studied, and analyzed. The evolution of special education laws and terms related to the interpretation of the "less restrictive environment" will be studied. The roles and responsibilities of each of the members of the special education team will be presented. The inclusion of children and youth with physical, emotional, and mental disabilities will be discussed. Environmental, routine, physical, and all other adaptations to include children and youth with disabilities in the regular education classroom will be studied. Teamwork, professional communication, and collaboration among the concerned professionals will be stressed.

EDUC 536
Contemporary Approaches in Early Intervention
Three Credits
The course focuses on the study and analysis of contemporary approaches in the early intervention field, including historical and evolutionary aspects. Philosophical, ethical, and legislative foundations will also be studied. Contemporary approaches and regulations for the provision of early intervention services in Puerto Rico will be analyzed, as they intend to reduce the future need for additional special education services. Students will become familiar with the Puerto Rico early intervention services delivery system called Avanzando Juntos, the Puerto Rico Department of Health Interagency Coordination Council (ICC), and the Puerto Rico Comprehensive System for Personnel Development (CSPD), established under IDEA.

EDUC 537
Management and Educational Strategies for the Student with Pervasive Developmental Disorders Attention Deficit or Other Psychiatric Disturbances
Three Credits
The course consists of the presentation, discussion, and analysis of different management and educational strategies and their applicability in the education of children with pervasive developmental disorders, attention deficit, or other psychiatric disturbances. Special emphasis will be given to the implementation of management and educational strategies according to the student's academic placement along the special education continuum. Special education students and parents' rights and responsibilities will be studied. Application of behavior modification techniques will be studied as they relate to the inclusion of children with special needs into regular education classrooms.

EDUC 539
Assessment and Instructional Design for the Teaching of Students with Disabilities
Three Credits
The course focuses on assessment as the basis for individualized instructional design. Students will work with a variety of formal and informal assessment instruments. Adaptation of assessment instruments and procedures to provide for the needs of children with disabilities will be studied. Individualized instructional design based on identified strengths and needs, will be discussed. The integration of academic, clinical, and family goals into the curriculum will be emphasized. Students will be exposed to different curricular alternatives and will gain skills that will enable them to analyze and propose curricular changes based on their students' needs.

EDUC 540
Theories, Strategies and Resources for Teaching Fine Arts
Three Credits
The course focuses on the study, discussion and analysis of theories that sustain the teaching of music, art, dance and drama in elementary and secondary schools. Exploration of innovative strategies used to motivate students in their artistic and creative experiences will be emphasized. The course includes an inventory of resources needed for the teaching of fine arts at the different school levels, as well as the exploration of available technology resources to teach these subjects.

EDUC 541
The Use of Technology in the Teaching of Fine Arts
Three Credits
The course centers on exploration, practice and handling of different technologies available for the teaching of music,

visual arts, dance and theater arts in elementary and secondary schools. It includes discussion of ethical and legal issues concerning the use of the available technology for teaching fine arts.

EDUC 542
Integration of Fine Arts into the Secondary School Curriculum
Three Credits
The course focuses on the study and analysis of contemporary theories that sustain the integration of fine arts activities in the secondary school curriculum. Emphasis is on the development of study units that integrate one or more of the fine arts into the teaching of academic subjects in the secondary school. Strategies for assessment and evaluation of students who are involved in fine arts activities in the secondary school will be examined.

EDUC 543
Media, Techniques and Materials in the Visual Arts
Three Credits
The course centers on the study and analysis of innovative media, techniques and materials available for the teaching of visual arts in elementary and secondary schools. It includes an exploration of diverse approaches, such as technological media, that contribute to the development of students' creativity and ability to communicate through the visual arts.

EDUC 544
Visual Arts Production Workshop
Three Credits
This course uses experimentation and production as a mean for the art teachers to review and enrich their own artistic abilities, while practicing strategies and techniques that may be used in their teaching. Emphasis will be placed on creation of art forms, while also reviewing artistic criticism and aesthetics.

EDUC 546
Assistive Technology in the Special Education Field
Three Credits
The course presents a general vision of disabilities and the potential benefit of assistive technology to facilitate academic performance, communication, and the independence of students with special needs. Students will learn how mobility, sensory, and communication aids, adapted computer access, and environmental controls help people with different disabilities participate and fully interact in their homes, schools, and community. Students of this course will learn about the legal, administrative, and academic bases that support the technological aids needed in and out of the classroom by people with special needs.

EDUC 547
Language Development and Acquisition: Implications for Learning to Read and Write
Three Credits
The course deals with processes involved in the acquisition and development of language in children from birth to 8 years of age. Theories and curricular models that promote maximum development of language skills are also studied. Emphasis is placed on the study of the whole language approach and reading-writing skills development.

EDUC 550
Second Language Acquisition
Three Credits
The course focuses on the analysis of theories related to the process of language development, learning, and second language acquisition. The influence of language acquisition on learning and literacy will be studied.

EDUC 551
Reading Processes in the English as a Second Language Classroom
Three Credits
The course centers on the study and analysis of current theories relating to reading processes. Different approaches to the teaching of reading and their application in the ESL classroom will be discussed. Students will also become acquainted with the different skills involved in the reading process and with various teaching and evaluation strategies that can be used in the ESL classroom.

EDUC 552
Teaching the Structure of the English Language to ESL Students
Three Credits
The course is an introduction to theories of English language phonology, syntax, and semantics, and their implications for developing English language understanding, speaking, reading and writing skills to speakers of other languages. Particular emphasis will be placed on the development of related teaching and learning approaches.

EDUC 553
Language, Cognition and ESL/Curriculum Development
Three Credits
The course consists of an examination of the relationship between language and related issues of human cognition in curriculum and instruction. Students will investigate seminal and recent studies from the fields of linguistics, philosophy, and psychology as these relate to the problem of curriculum and instruction.

EDUC 554
The Use of Computers in ESL Curriculum and Instruction
Three Credits
The course focuses on the discussion of the ways in which microcomputers can be used to enhance the learning of ESL. Emphasis will be placed on strategies for integrating the use of the computer and ESL curriculum effectively. Hands-on evaluation of ESL software using tutorials, simulations, and drill and practice are also included.

EDUC 555
Development of Communication Skills in the ESL Students
Three Credits
The course focuses on the identification of activities that promote second-language acquisition, emphasizing the active language skills of listening comprehension, speaking, and writing. It includes discussion of different acquisition models and their implications and applications in the classroom. Identification, selection and development of instructional materials and strategies for the teaching of the skills will be emphasized. Areas to be studied will include aural discrimination, attention and recall; vocabulary development, oral production and pronunciation, and the mechanics and process of writing.

EDUC 556
Contrastive Analysis of English and Spanish
Three Credits
The course centers on the method of contrastive analysis as it is applied to the English and Spanish languages. The theory of language transfer on which it is based is also discussed. Instructional strategies for the teaching of selected areas of language interference will be explored. Basic research techniques for the analysis of language in naturally occurring situations will be applied. The systematic comparison of the similarities and differences between the phonological, morphological, syntactic, semantic, and pragmatic systems of English and Spanish, effective teaching practices, and exposure to basic research procedures in this field of study are the fundamental bases of the course.

EDUC 557
Organization of Vocal Music Groups
Three Credits
The course focuses on the composition and organization of vocal music groups within the elementary and secondary schools. It includes the development of work units for the different school levels, as well as appropriate musical arrangements for the different age groups and vocal music groups. Techniques and methodologies to work with vocal music groups will be examined. The role of vocal music groups in the school curriculum will be discussed.

EDUC 558
Music Production Seminar
Three Credits
The course is a musical production seminar in which principles involved in the organization of musical activities are discussed. Activities and programs appropriate to the grade level and musical competence of children are developed. Musical activities will be integrated into academic subjects and other fine arts. The course includes practice of assessment and evaluation strategies appropriate to musical productions and the academic level of students.

EDUC 559
Techniques for the Organization of Instrumental Groups
Three Credits
The course focuses on the study and analysis of different instrumental groups that may be organized in elementary or secondary schools. Techniques used to create, conduct, rehearse and develop musicality in these groups will be examined.

EDUC 560
Teaching of Reading and Writing at the Secondary Level
Three Credits
This course examines the nature of reading comprehension and writing at the secondary level. It includes discussion of strategies to teach the stages required for the development of those skills. Thinking skills and critical thinking as a basis for the development of appropriate reading comprehension and writing levels in all content areas will also be discussed.

EDUC 561
Computer Applications for Teaching
Three Credits
The course focuses on the different uses of computers in education. It includes the following applications: text processors, electronic worksheets, statistical analysis programs, database systems, tutorials, educational games, simulations, common language programs, and specialized languages for creating educational modules.

EDUC 562
Computer Applications for Educational Management
Three Credits
The course centers on the use of computers as tools for educational administration. Computer applications (word processing, graphing, spreadsheets, databases, desktop publishing and presentations, statistical packages, and computer-mediated electronic communications) will serve as tools for developing activities such as budget and inventory control, student and personnel evaluation, statistical data and mail management, as well as report generation and presentation.

EDUC 563
Principles of Bilingual Education
Three Credits
The course deals with theory, goals, and research data on bilingual education. Topics include history, development, and content of various models of bilingual/bicultural education presently implemented in the U.S., foreign countries, and Puerto Rico.

EDUC 564
Applied Linguistics for ESL Teachers
Three Credits
"Applied Linguistics for ESL Teachers" provides the student with substantial knowledge of key concepts, issues, insights, and pedagogical implications of research in some of the issues related to ESL and applied linguistics. Some of the applied linguistic issues that will be examined in the course include the following: the use of phonics and phonemic awareness in learning to read, factors in teaching oral communication in social contexts, irregularities in English orthography and implications for teaching, word formation in vocabulary development and writing, and language proficiency in ESL.

EDUC 566
Methods of Teaching English as a Second Language
Three Credits
The course focuses on the study of various methods for teaching a second language, as well as their principles and foundations. Topics include evaluation, design and adaptation of materials for teaching English as a second language. The critical analysis of research on ESL methods is fundamental to this course.

EDUC 567
Socio-cultural Aspects of Curriculum and Teaching in Bilingual Settings
Three Credits
Sociological and cultural issues that impact the development and implementation of both curriculum and teaching of students will be examined. Emphasis will be placed on the results of research conducted in this area.

EDUC 568
Teaching Math and Science in Bilingual Settings
Three Credits
The course is a review of recent research on the teaching of math and science (with emphasis on bilingual settings). It includes an intensive review of available curriculum materials and methods to teach mathematical and scientific concepts to LSP students.

EDUC 569
Classroom-based Assessment Methods
Three Credits
The course is an introduction to classroom-based assessment methodologies for determining oral language proficiency, reading progress, writing skills, mathematics development, learning styles, and social development.

EDUC 571
Seminar for Dance Production: Body Movement and Expression
Three Credits
The course is a seminar/workshop of dance production, in which principles involved in dance activities are discussed. The production of dance programs is central to the course; this will be accomplished according to the ability and level of competence of the students. The course also includes the theory and practice of the motor skills of the human body, from the standpoints of movement and artistic expression.

EDUC 572
Development and Evolution of Dance
Three Credits
The course deals with the origin, evolution and development of dance throughout the human history. The role of dance in different cultures, from the Far East to the Western World, is discussed. The role of dance in the history of Puerto Rico is analyzed. The diverse manifestations of dance such as magical dance, social dance and representative dance are explored.

EDUC 573
Methodology and Integration of Dance into Elementary School Teaching
Three Credits
The course deals with the integration of dance and corporal movement into the study and learning of other subject matters. Methodologies appropriate to this art form are identified and studied. How this art may contribute to the enrichment of the basic elementary curriculum is examined. The use of technological innovations to teach dance and corporal movement is discussed.

EDUC 574
Theatrical Techniques
Three Credits
The course focuses on diverse theatrical techniques used to enhance non-dramatic literature for the observer and to present a creative challenge to the performer. In this course students will learn theatrical techniques to be used with non-dramatic literary genres as well as with other written expressions.

EDUC 576
Theatre Production Workshop
Three Credits
This course uses the presentation of a one-act play or different scenes of dramatic work as a means of refreshing theatre techniques while practicing strategies and techniques appropriate for the integration of theatrical activities into teaching. Students in this course will take part in the entire process of preparing a play for production by developing a theatrical design.

EDUC 580
Educational Psychology: Human Growth and Development
Three Credits
The course deals with theories of human development as seen from different perspectives: biological, social, philosophical, historical and psychological. It examines the physical, moral, sexual, social and cognitive development of individuals from conception through the aging process. Human development is analyzed as a continuous process throughout the lifespan, giving special attention to the social and cultural context in which development occurs.

EDUC 581
Introduction to Guidance and Counseling Services
Three Credits
The course centers on a professional orientation to the counseling profession. Topics include history and philosophy, work setting and roles. Students will be introduced to theories, approaches and stages of the helping process.

EDUC 582
Legal and Ethical Issues in Counseling
Three Credits
The course deals with ethical and legal issues related to the guidance and counseling process. Emphasis is placed on legal dispositions related to the services, procedures and the rights of individuals involved in the process. Ethical codes and standards for the counseling profession will also be studied.

EDUC 583
Instruments and Techniques for Diagnosis and Assessment
Three Credits
The course focuses on instruments and techniques used for assessment, measurement, and evaluation. The purpose, characteristics and kinds of standardized tests, scales, observations and records will be analyzed. Emphasis is placed on aptitude, achievement, intelligence, and personality tests.

EDUC 584
Individual Counseling Techniques
Three Credits
The course deals with the study and analysis of the helping process of individual counseling. Emphasis is placed on the counseling process stages (establishing the relationship, assessing the problem, goal setting, initiating interventions, termination and follow-up). Topics include exposition, study and discussion of different techniques, with emphasis on the cognitive/behavioral and affective areas.

EDUC 585
Group Counseling Techniques
Three Credits
The course focuses on theories, techniques and procedures used in group guidance and counseling. Topics include: purposes and goals of group guidance and counseling, advantages/disadvantages, selection of members, roles, and leadership, as well as the different stages of the process.

EDUC 586
Career Counseling
Three Credits
The course deals with theories and principles of career counseling, combining theory and practice as they apply to career counseling. It includes knowledge and use of different occupational resources such as PROICC, standardized tests (Aptitude, Personality, and Occupational Interests) as well as other resources in a career center.

EDUC 587
Internship
Three Credits
This is supervised clinical experience in which students will put into practice the knowledge and skills acquired in the program. Students must complete 150 direct service hours in counseling activities in the selected scenario.

EDUC 590
Methods of Reading Diagnosis and Assessment
Three Credits
The course focuses on assessment as a tool in making instructional decisions about reading and writing. Topics include the uses, characteristics, interpretations, and limitations of a variety of formal and informal measures and approaches of reading/writing and related skills. A case-study approach is used. The course assists the student in becoming a knowledgeable consumer of assessment measures and of diagnostic support services.

EDUC 591
Perceptual Motor Development: Implications for Primary School Teachers
Three Credits
The course deals with the physical, social, emotional and cognitive development of children from 0 to 8 years of age and the implications for primary school teachers It includes discussion and analysis of current development theories and their application in the child's maturational process. Course activities include practice of skills that will contribute to an adequate perceptual motor development in young children.

EDUC 592
Integration of the Arts into the K-3 Curriculum
Three Credits
The course focuses on modern theories related to the integration of the arts into the K-3 curriculum. Study units using one or more artistic expressions as teaching strategies will be prepared. Assessment and evaluation strategies appropriate to children's artistic performance will be discussed and analyzed.

EDUC 593
Teaching of Science at the Primary School Level
Three Credits
The course prepares teachers to engage students in science inquiry and to use constructivist teaching methodologies and new assessment strategies. Emphasis is placed on the history of science education and the analysis of the Science Education Standards.

EDUC 594
Mathematics in the Primary Schools
Three Credits
The course focuses on current methods of teaching mathematics at the K-3 level. It includes the study of an activities-based curriculum focused on problem-solving, as well as standardized instruments for curriculum and student evaluation and assessment. Emphasis is placed on the use of technology for problem-solving and decision-making.

EDUC 595
Integration of Reading into Content Areas Curriculum
Three Credits
The course deals with instructional strategies for integrating reading skills in social studies, sciences, mathematics and fine arts courses. Stress is on the acquisition of simple to complex reading skills in the school curriculum, through comprehension and critical thinking. The holistic approach in different subjects and school levels will be emphasized.

EDUC 596
Whole Language and the Development of Reading/Writing Processes
Three Credits
The course focuses on the study of the theoretical bases of the whole language approach and its implications for the teaching of reading and writing. It includes analysis of strategies and materials that can be used to integrate reading and writing to the K-3 curriculum.

EDUC 597
Social Studies Curriculum and Methodology
Three Credits
Critical analysis of current methodology trends and issues in social studies curriculum and learning. Content and professional standards of the National Council for the Social Studies and their relationship to Puerto Rico´s curriculum are analyzed. Research and the use of technology are required in this course.

Requisite: EDUC 501

EDUC 598
The Teaching of Science in the Elementary School
Three Credits
Critical analysis of scientific activities, teaching strategies, student assessment and integration of the new technologies used in the science classroom. The student will study and compare curriculums from other countries with the Conceptual Framework and the content standards for the science program designed by the Department of Education of Puerto Rico.

Requisite: EDUC 501

EDUC 599
The Teaching of Math in the Elementary School
Three Credits
Analysis and discussion of up-to-date mathematics teaching trends for grades 4th through 6th. Emphasis will be given on instructional design process focused on a constructivist curriculum view supported by the application of inquiry, discovery and problem solving. An integration of information and communication technology to the instructional process will be presented as a support tool for mathematics teaching strategies. Assessment evaluation and measurement techniques will be integrated in the teaching-learning process.

Requisite: EDUC 501

EDUC 600
Educational Research
Three Credits
The course centers on the study of educational research methodologies and theory. Emphasis is given to practical

applications of research findings and teacher-conducted research. Research course for all specialties.

EDUC 601
Research Seminar for Thesis
Three Credits
The purpose of this course is to prepare students to select a research problem, submit a proposal for the study of the problem and elaborate a thesis under the direction of the advisor. It is a research course for all specialties.

EDUC 602
Seminar: Readings and Research in Educational Problems
Three Credits
The course centers on research of the literature in a topic related to the student's major. Based on a review of recent literature and research, the student submits written work for the primary purpose of analysis of a problem. It is a research course for all specialties

EDUC 603
Research II
Three Credits
The course geared to completing the research required to obtain the Master's Degree in Education. As part of this course, students must complete the research study presented in their EDUC 602 proposal. They will present research findings as well as conclusions and recommendations based on the findings.
Requisites: EDUC 600, EDUC 602

EDUC 605, 606 or 607
Special Topics Seminars
Three Credits
This is a one-credit course that provides a forum for the discussion of a specific topic or issue. Topics will be announced each semester, prior to enrollment. Students may take three seminars to complete three elective credits. These seminars will be offered to students enrolled in the Education and Public Affairs graduate programs with approval of the Program Chairperson. Professionals interested in the topic discussed may also participate through the Continuing Education Division.

EDUC 608
Special Project in Reading
Three Credits
The course centers on the application of theoretical knowledge acquired in previous courses to the teaching of reading as well as on the practical skills developed as educational practitioners. The course requires the design and development of a project geared to improving the reading abilities of elementary school students.

EDUC 609, 610, 611
Visual Arts Workshops/Seminars
Three Credits
These one-credit courses provide space for a workshop or seminar related to the visual arts. Topics may vary according to the availability of visiting lecturers or artists. Students may take up to three workshops or seminars in order to complete three credits that will be considered as an elective course. These seminars or workshops will be available to graduate students upon the authorization of the Director of the Graduate Program. Enrollment is available to graduate students, faculty of the University, and interested professionals, with the authorization of the Director of the Graduate Program.

EDUC 612, 613, 614
Music Workshops/Seminars
Three Credits
These one-credit courses provide space for a workshop or seminar related to a specific theme in music. Topics may vary according to the availability of visiting music lecturers. Students may take up to three workshops or seminars in order to complete three credits counted as an elective. These seminars or workshops will be available to graduate students upon the authorization of the Director of the Graduate Program. Enrollment is open to graduate students, faculty of the University, and interested professionals, who must have the authorization of the Director of the Graduate Program.

EDUC 617
Classroom Research Seminar
Three Credits
The course centers on the development of a classroom research project in which the student will put into practice the knowledge acquired in the required coursework. This is a research course for all specialties.

EDUC 618
Children and Adolescents Counseling
Three Credits
This course examines the theories and strategies of intervention for children and adolescents counseling at school. It includes the study of the children and adolescents counseling, students of diverse cultures and students with special needs. Studies specific situations such as the abuse of controlled substances, school violence, child abuse, self-esteem, the duel, and the divorce will be studied.
Requisites: EDUC 580, EDUC 584

EDUC 620, 621, 622
Theater Seminars/Workshops
Three Credits
These one-credit courses provide space for a workshop or seminar related to a specific theater arts theme that may vary each semester, according to the availability of visiting lecturers, dramatists, or actors. Students may take up to three workshops or seminars in order to complete a three-credit elective course. These seminars or workshops will be available to graduate students upon the authorization of the Director of the Graduate Program. Enrollment is open to graduate students, faculty of the University, and interested professionals, with the authorization of the Director of the Graduate Program.

EDUC 623, 624, 625
Dance Seminar/Workshop
Three Credits
These one-credit courses provide space for a workshop or seminar related to a specific dance theme that may vary each semester, according to the availability of visiting dance lecturers or artists. Students may take up to three workshops or seminars in order to complete three elective credits. These seminars or workshops will be available to graduate students with the authorization of the Director of the Graduate Program. Enrollment is open to graduate students, faculty of the University, and interested professionals, with the authorization of the Director of the Graduate Program.

EDUC 630
Statistics for Educational Research
Three Credits
Identification of the adequate research approach for the solution of pedagogical problems. Emphasis is made in topics related to descriptive and inferential data analysis making emphasis in results' interpretation. Other topics that will be covered include elementary notions of probability, estimation, sampling, hypothesis testing, experts' criteria and experimental design.

EDUC 640
Principles of Instructional Design
Three Credits
Analysis of instructional design as a systematic process for planning learning experiences. The general design model applied uses the identification of learning needs to design and develop an instructional system supported by information and communication technologies. Also, several instructional design models will be discussed based on their theoretical foundations and learning strategies.

EDUC 641
Foundations of Educational Technology
Three Credits
Discussion of the development of the concept and the professional field of educational technology. Study of the background, foundations, issues, modern trends and practices related to educational technology. It emphasizes the discussion of social aspects and policies regarding the use and integration of technology in the educational setting.

EDUC 642
Instructional Media
Three Credits
Study of the historical development of the media use in teaching. The basic principles for media creation, selection and use in the instructional process will be discussed. Analysis of the importance of instructional design (ASSURE Model) and the methodological aspects for the creation of learning experiences based on multimedia. Also, the comprehension of legal norms about the proper use of media and instructional materials will be emphasized.

EDUC 643
Foundations of Distance Education
Three Credits
Discussion of the theoretical and philosophical foundations of distance education. Exploration of current trends affecting distance educational and its implications for the design and development of learning experiences at a distance. Students will examine different models, theories and technologies used in the development and distribution of distance education. It will emphasize the role of internet and the learning/content management systems in the management for quality in distance education.

EDUC 645
Introduction to the School Counseling
Three Credits
Introduction to the school counseling profession. Evaluated professional aspects including history, organizational structure, multicultural standards, legal and Ethical aspects. Explore the School Counseling as profession with emphasis in the cognitive, emotional, affective, academic and social areas in children and adolescents.

Requisites: EDUC 580, EDUC 584

EDUC 646
Development and Management of School Counseling Programs
Three Credits
This course is designed to introduce students to the philosophy of counseling programs at the school in grades K-12 using the ASCA national model. Students must demonstrate professional knowledge, the skills needed to

promote academic excellence, personal emotional development / social of all K-12 students. The emphasis in the programs of school counseling as critical components of the enterprise, education, planning, "accountability" and the assessment thereof.

Requisites: EDUC 581, EDUC 645

EDUC 648
Practicum in School Counseling
Three Credits
This course is a formative experience in school counseling as required by the Council of Accreditation of Counseling and Related Educational Programs (CRACREP). It consisted of 100 hours of a practicum experience. The practicum must include direct service hours in individual and group interventions. If focuses on the development competencies in individual and group counseling in the school interacting with parents, students and school personnel.

Requisites: EDUC 580, EDUC 581, EDUC 582, EDUC 583, EDUC 584, EDUC 584, EDUC 586, EDUC 645, EDUC 646, EDUC 618

EDUC 649
Counseling in Students Affairs in Higher Education
Three Credits
The purpose of this course is to provide the future counselor information about counseling roles in higher education institutions. Through the study of different theoretical perspectives students will analyze the philosophy and organizational culture of higher education institutions and their impact on counseling programs. Characteristics and profile of traditional and non-traditional students the role of student service offices and the relationship of counseling professional with the institution's mission and goals will also be topics of discussion.

Requisites: EDUC 580, EDUC 581, EDUC 582, EDUC 583, EDUC 584, EDUC 585, EDUC 586

EDUC 650
Counseling for Students Development in Higher Education
Three Credits
The purpose of this course is to provide prospective counselors with the strategies needed for the development and well-being of university students. During the course, students will have the opportunity to discuss resources needed for the transition from school to a higher education institution as well as legal and ethical issues pertaining university students. Topics discussed include cultural diversity, college adaption, students' needs and retention.

Requisites: EDUC 580, EDUC 581, EDUC 582, EDUC 583, EDUC 584, EDUC 585, EDUC 586, EDUC 649, EDUC 651

EDUC 651
Counseling for Prevention in Higher Education: The College Students Experiences
Three Credits
This course includes the study and analysis of concepts related to the prevention and promotion of mental health, use of models of prevention and risk factors and protection for the creation of prevention programs within the campus. Also includes the prevention strategies and science based prevention services, also the strategic plan and the Prevention program evaluation.

Requisites: EDUC 580, EDUC 581, EDUC 582, EDUC 583, EDUC 584, EDUC 585, EDUC 586

EDUC 652
Practicum in Counseling in Students Affairs in Higher Education
Three Credits
This course is a formative experience in students affair counseling as required by the Council of Accreditation of Counseling and Related Educational Programs (CRACREP) for a 100 hours practicum experience. The practicum must include a direct service hours in individual and group interventions. If focuses on the development of competencies in individual and group counseling in higher education institution interacting with faculty, students and student service personnel.

Requisites: EDUC 580, EDUC 581, EDUC 582, EDUC 583, EDUC 584, EDUC 585, EDUC 586, EDUC 649, EDUC 650, EDUC 651

EDUC 653
Nature and psychosocial aspects of students with autism
Three Credits
This course offers students and overview and analysis of the spectrum nature of autism based on recent research. We will discuss the basic concepts and new discoveries about this condition. Be considered characteristic of the behaviors, attending and giving emphasis to the psychological aspects of a student with autism. Through the course will present the main models of intervention used to achieve effective social relations in the different environments that the student shares. Also, learning activities that emphasize the optimal development of social skills will be designed.

Requisites: EDUC 580, EDUC 530, EDUC 535, EDUC 539, EDUC 546

EDUC 654
Methods of communication in the child with autism
Presentation, discussion and analysis of the main methods of communication used in the intervention of students with autism as well as recommended strategies to address the problems of communication in this population. Students will analyze different etiologies related to the communication of

the child with autism. The theories that have different approaches to intervene appropriately with students within the autism spectrum will be studied. This course also emphasizes the recommended techniques to work effectively the particular needs presented by each student. It also took into consideration the use of technological assistance to improve communication difficulties.

Requisites: EDUC 580, EDUC 530, EDUC 535, EDUC 539, EDUC 546

EDUC 655
Behavior management of students with autism
Three Credits
This course presents the main strategies used in the intervention and behavior management of students with autism. The basic principles of the suggested models for working with behavior modification will be discussed. Educational programs will be evaluated as well as existing approaches to intervene positively with behavioral patterns present in this population. It emphasized the application of the techniques with the purpose of evaluating their effectiveness in designing intervention plans that will lead to improved autistic behavior.

Requisites: EDUC 653, EDUC 654

EDUC 656
Methodology for teaching autistics students
Three Credits
This course is aimed at understanding the concept of methodology and curriculum as a basis for instructional and educational design based on the strengths and needs of students with conditions that make up the autism spectrum. It presents the characteristics that describe the student with autism to emphasize the importance of adapting the procedures of assessment to meet the needs of these. The theoretical and philosophical basis and different curricular alternatives and skills that enable them to integrate the curriculum goals according to requirements will be discussed. Educational programs will be evaluated as well as existing approaches to intervene positively with the learning process in this population. The processes of integration, inclusion, transition and independent living will be analyzed.

Requisites: EDUC 653, EDUC 654

EDUC 657
Evaluation of children with autism
Three Credits
This course is aimed at understanding the process of evaluation of conditions that make up the autism spectrum. It presents the indicators, characteristics and behaviors that describe the student with autism with emphasis on early identification. It will also discuss aspects of alternative assessment to achieve an accurate diagnosis as an appropriate educational intervention. Students will learn about different scales of assessment and screening for autism, including those developed in Puerto Rico.

Requisites: EDUC 656

EDUC 658
Physical disabilities and health impairment in childhood and adolescence
Three Credits
The course presents an overview of the characteristics, prevalence, types and causes that can develop physical disabilities and health impartment. It emphasizes the different teaching methods and educational strategies that can be used with this population. It focuses on the intervention process and modifications to the elementary and secondary levels.

Requisites: EDUC 580, EDUC 530, EDUC 535, EDUC 539, EDUC 546

EDUC 659
Sensory problems in childhood and adolescence
Three Credits
The course presents an overview of teaching methodologies and educational strategies for people who have been diagnosed with any needs related to five senses. It's emphasizes the teaching and modifications necessary to maximize the potential of students with auditory, visual, speech and/or sensory impairments. The course provides to the professional, the knowledge and skills on strategies for teaching these students in kindergarten through twelfth grade.

Requisites: EDUC 580, EDUC 530, EDUC 535, EDUC 539, EDUC 546

EDUC 660
The education of children and youth with cognitive
Three Credits
The course offers to the professional the knowledge and intervention strategies for teaching people with cognitive disabilities throughout their school years. Although, emphasize for teaching students with intellectual disabilities, learning disabilities and autism, during his studies at the preschool, elementary and secondary level. It is proposed to enable the professional development of tools to maximize student performance and enable the professional development of tools to maximize student performance and enable it for proper integration into society.

Requisites: EDUC 658, EDUC 659

EDUC 662
Transitional process for special education students
Three Credits
The course presents the methodology used for teaching handicap students who are in the process of entering high school. It proposes a vision for the process of transition to adulthood, emphasizing the development of activities that promote student skills in the areas of education, training, employment, independent living and other activities in the community.

Requisites: EDUC 580, EDUC 530, EDUC 535, EDUC 539, EDUC 546, EDUC 660, EDUC 661

EDUC 702
Administration of Fiscal Resources
Three Credits
The course focuses on basic knowledge related to the administration of fiscal resources. Topics include the components of an operational budget preparation, administration and control, establishing financial priorities, budget transfer, and financial forecasts.

EDUC 703
Comparative Education
Three Credits
The course deals with education policies and practices in selected societies, and includes a comparative study of the Puerto Rican System. Specific problems are analyzed from a comparative perspective. Among the problems studied are: the relationship between primary, secondary and higher education levels; the relationship between public and private education: access to education, and quality education.

EDUC 704
The Teaching of Writing: Theory and Practice
Three Credits
The course centers on the study and analysis of theoretical and practical issues related to the teaching of writing. Students will improve their own writing while learning the writing process. Strategies for teaching the thinking/writing process and their applications to ESL teaching will be emphasized. The course uses a workshop format and is designed to model the recommended strategies.

EDUC 705
Planning and Evaluation in Education
Three Credits
The course deals with the conceptualization and practice of planning and evaluation in the educational setting. It includes analysis of approaches, tendencies, strategies for planning and evaluation, and the practical application of these concepts to real situations facing the administrative and teaching personnel in the education system.

EDUC 706
CD-ROMs and Online Databases as Information Tools
Three Credits
The course focuses on processes related to CD-ROM publication, selection, and evaluation. Emphasis is placed on strategies for the use of the thesaurus as a research tool. It includes Boolean search strategies and online database topics. Emphasis will be given to workshops using CD-ROM databases.

EDUC 707
Organization of Bibliographic Resources in Automated Systems
Three Credits
The course covers principles of information resources organization in an automated environment. Different classification systems and cataloging processes will be studied and analyzed, using automated library systems. Emphasis will be placed on workshops.

EDUC 708
Skills Development in Information Literacy
Three Credits
The course centers on the study of information literacy skills. Emphasis will be on the development of an information literacy program according to the client's needs. It includes the study of different instructional methods, including instructional design.

EDUC 709
Ethics and Professionalism in Information Literacy
Three Credits
The course deals with ethical issues pertaining to the information specialist profession. Topics include leadership, legislation related to information rights, equal informational opportunity, and the Privacy Information Act.

EDUC 710
The Use of Internet as an Information Resource
Three Credits
The course is an overview of the Internet System and its characteristics. Emphasis will be placed on Internet uses and strategies for information research. Three Internet workshops will be included.

EDUC 714
Historical and Philosophical Perspectives in Education
Three Credits
The course covers historical and philosophical bases of education in the context of Puerto Rico, the United States and other countries, and how they relate to the decisions taken by leaders in educational institutions. Special emphasis is given to defining a personal philosophy of education and identification of the philosophies that

permeate the different institutions represented by the participants in the class.

EDUC 715
Social, Cultural and Political Dimensions of Educational Organization
Three Credits
This course will examine the process of learning through the ages by critically examining cross-cultural research and developmental theories designed to describe and interpret the physical, social, emotional, intellectual and psychological processes involved. Emphasis is placed on the range of individual, family, environmental and cultural factors that may enhance or inhibit human growth and development, and on the critical role that human relationships play in the lifelong interactive processes of learning and growth. Through multifaceted inquiry utilizing self-reflection, case studies, theoretical analyses and child assessment and observation, participants will consider the implications for their work as educational leaders in approaching current challenges with students, parents, community, and teachers.

EDUC 716
Contemporary Problems and Issues
Three Credits
The course deals with problems and issues that relate to the present and future of public and private education. Problems are identified in a forum that brings experiences and current methodology together to address problems that course participants face as educators. Long range and short-range problem-solving strategies directed toward increasing the scope of curriculum options and expanding the broad applicability of instructional resources are addressed in terms of current situational models.

EDUC 717
Legal Issues in Education
Three Credits
The course centers on the discussion of a wide variety of legal issues which arise involving teachers, administrators, school board members, parents and students. Topics will include hiring, certification, supervision, evaluation, tenure, due process rights, discipline, child abuse and special education. Students will be expected to read and discuss a wide variety of court cases and primary source materials so as to extract important principles and practices, which will then be applied to hypothetical problems.

EDUC 718
Ethics and Education
Three Credits
The course deals with the study of educational policy developed through micro and macro political elements. Ethical and value issues confronting educational leaders will be examined in order to demonstrate how individual values drive ethical behavior and decisions.

EDUC 719
Interpersonal Communication and Collaboration
Three Credits
The course focuses on theories and processes of interpersonal communication, including listening, sending and receiving messages, confrontation, problem-solving and conflict resolution. Emphasis is placed in Communication Theory, nonverbal communication, verbal communication, gender and cross-cultural communication conflicts.

EDUC 720
Child Development Current Theories
Three Credits
The study of the complexity of child development through examining physical, and social theories, as well as empirical studies from conception to early years. The emphasis is on the development theories and the importance for the learning process in the child; there will be pertinent literature search, discussion and critique. Topics also include the impact of culture and diversity on learning child ecology, and family and communication media.

EDUC 721
Preschooler/Primary Teaching in the 21st Century: Tendencies and innovations
Three Credits
This course examines the mainstream and innovative thought in Child Education for the 21st Century. How are we thinking about teaching, how do we put it into action in order to prepare the students for the challenges to come and how can we translate all this into an efficient curriculum. There will be lectures in a seminar setting that will provide the doctoral candidate with a solid base to analyze the different and newer tendencies in the field. This setting will also allow the student to develop their own positions, to defend them as well as appreciate and utilize viewpoints different from their own.

EDUC 722
Qualitative Research and Practice in Child Education
Three Credits
This course will make the student familiar with Qualitative Research in Child Education. It will focus on methodology, analysis and data interpretation. Based on the lectures we

will offer the opportunity to discuss teaching strategies as well as research/investigation related to the child that age.

EDUC 723
Organization and Governance in the Higher Education Institutions
Three Credits
This course has been designed for doctoral students who work or intend to work in higher education institutions. Themes to be discussed and analyzed will be the organizational structure, and governance procedures used in higher education in Puerto Rico. To be discussed will be the duties and responsibilities of the different governing positions and bodies; and how the incumbents are appointed. The role of accrediting agencies will be examined Research activities related to both academic and administrative governance will be required.

EDUC 724
Student Services in Higher Education Institutions
Three Credits
The course focuses on the analysis of theories, origin and practices related to student services in higher education institutions. The theoretical background, roles and responsibilities of student services personnel, organizational structures and relevant issues of this field are some of the topics to be analyzed.

EDUC 800
Leadership and Administration in Higher Education
Three Credits
This course, Leadership and Administration in Higher Education, will explore leadership in higher education and considerations related to the future status of higher education. The primary focus of the course is the study of the complexity of governance and structures in Higher Education. Contemporary issues affecting Higher Education will also be addressed. The examination of characteristics of successful leaders will occur through readings and personal interactions.

EDUC 801
Project Management in Education
Three Credits
The course deals with skills and techniques in the project management field. With this body of knowledge, students can help educational organizations meet their goals and expectations by using strategies to manage the process of planning, development and control of projects.

EDUC 802
School Finance
Three Credits
This is a general course in school finance. It is divided into four main areas: context of school finance, strategic planning as the basis for budgeting, budget process, and financial management in education. The student will have the opportunity to view school finance as a process in which planning, budgeting and administration are integrated in order to achieve organizational goals.

EDUC 803
Evaluation of Instructional Programs: Theory and Application
Three Credits
The course focuses on an examination of evaluation strategies, techniques and models applicable to instructional programs. It includes the study of the application of objectives to evaluation, development of evaluation designs, and systematic approaches to assessment, as well as problems of implementation and accountability. The course allows students to analyze and design appropriate strategies for evaluating curriculum. Emphasis is on applications in fieldwork settings.

EDUC 804
Leadership: Models and Strategies
Three Credits
The course focuses on the development and practice of identified leadership skills. It includes comprehensive study of the theoretical basis for leadership, analysis of leadership and management processes, exploration of individual assets and liabilities of leaders, and the examination of leadership in groups.

EDUC 805
Instructional Leadership
Three Credits
This course focuses on leadership for the improvement of instruction. It covers current research on school and teaching effectiveness, instructional methodologies, staff development and school climate.

EDUC 806
Leading Organizational Change
Three Credits
The course centers on the study and analysis of theories of change and the role of the educational leader in initiating, developing, managing, and balancing processes of change in educational institutions. Emphasis will be placed on developing leadership skills for crafting a vision, mission, and strategic plans for change, as well as for aligning the work group behind the vision.

EDUC 807
Leadership, Community Relations and Partnerships
Three Credits
This course addresses the identification and utilization of community resources and the creation of partnerships, community linkages and collaboration efforts to provide for best educational practices and opportunities for students. Special attention is focused on the role of school and community leaders in the development and improvement of networks.

EDUC 808
Educational Computing
Three Credits
The course centers on the study of multiple desktop operating environments used in education and training. Students will learn operational procedures for computer operating systems to connect to file servers, library resources, lost systems, electronic mail and Internet resources.

EDUC 809
Instructional System Design
Three Credits
The course is an introduction to the principles of instructional design with emphasis on the role of learning technology-based tools. Topics discussed include instructional design concepts that are fundamental for educators, including school psychologists, curriculum designers, special education teachers, administrators, and counselors. Students are introduced to different models of instructional design for systematic planning of learning activities in which information is transferred to a learner. Students will complete a series of instructional design assignments using both traditional teaching tools and modern technology-based tools.

EDUC 810
Technology Media in Education and Training
Three Credits
The course focuses on skills, knowledge, and hands-on experience needed to integrate educational technology into the learning environment. Emphasis is on the use of technologies to address different learning styles. Topics include the rapidly changing field of educational technology and its implications on the culture of the classroom and the roles of the teacher and the student. The development of skills necessary to make the student a competent user of computer and communications technologies will also be discussed.

EDUC 811
Theory and Practice of Distance Education
Three Credits
The course centers on the study of the theory and practice of distance education and its application to the planning, development, utilization and evaluation of distance education systems in educational environments.

EDUC 812
Teaching, Learning and Cognition
Three Credits
The course deals with theoretical and empirical research on human learning and information processing. Emphasizes is on current perspectives on the nature of mind, brain-based learning, academic learning, and implications for teaching. Analysis will center on processes underlying cognition.

EDUC 813
Models and Styles of Teaching and Learning
Three Credits
The course focuses on research findings related to effective teaching practices. Students analyze instructional models and strategies of teaching, and probe theories and research applicable to the different models. The dichotomy between the research of teaching and the practice of teaching and how it can affect diverse learning styles will also be discussed.

EDUC 814
Curriculum Theory and Design
Three Credits
The course focuses on discussion and analysis of theoretical assumptions underlying curriculum designs. Topics include decision-making skills needed to determine curriculum design, and problems related to curriculum design, as well as strategies for constructing, developing and implementing a curriculum that is consistent with specific theoretical principles.

EDUC 815
Curriculum Planning and Development
Three Credits
The course centers on analyzing the influence of contemporary society and state departments of education on curriculum planning and development. Topics include the historical context in which curriculum is developed and modified; theories related to the purposes of education and curricular expectations; learning theories as related to curriculum development and evaluation; environmental factors as they influence curriculum planning, and the impact of technological innovations on curriculum development.

EDUC 816
Creating Learning Environments for Diverse Students
Three Credits
The course focuses on an examination and discussion of the complexities of teaching. The powerful impact of classroom environment behavior and maturation upon learning will be discussed. The course examines topics such as student perceptions of the classroom and of what is required for anticipated learning to occur; ways teachers use to learn about their students; approaches to student motivation, and the concept of effective classroom instruction.

EDUC 817
Behavior Management in the Classroom
Three Credits
The course deals with approaches to classroom management and motivational strategies that will enhance student behavior and performance. Topics include applied behavior analysis, behavior analysis techniques, criteria and procedures for selecting, defining and measuring behavior, and behavior modification. Technology as a tool for behavior management is discussed and applied.

EDUC 818
Early Identification of At-Risk Students
Three Credits
This course delineates at-risk behaviors of youngsters, including substance abuse, teen pregnancy, delinquency, violence, and youth suicide. Data on the five at-risk categories, treatment approaches and prevention strategies that focus on the family, the school and the individual are presented. Legal issues and concerns for human service professionals will also be examined. This course is directed toward persons involved in counseling in education, psychology, social work, special education and other areas of human service.

EDUC 819
Language Development Issues in the Curriculum of Puerto Rico's Public and Private Schools
Three Credits
The course deals with issues related to the teaching and learning of Spanish and English in Puerto Rico's public and private schools. The course centers on analytic examination of education paradigms, language teaching methodologies, policies, and practices, as compared to bilingual education models in the United States and in other parts of the world. The course will also examine language teacher education and teacher training, in addition to the sociopolitical climate for language teaching on the island.

EDUC 820
Teaching in Multicultural Environments
Three Credits
The course deals with issues related to paradigms of the teaching and learning of Spanish, language teaching methodologies, policies, and practices, as well as English teaching in Puerto Rico's public and private schools. The course examines education analytically, as compared to bilingual education models in the United Sates and other parts of the world. The course will also examine language teacher education and teacher training, in addition to the sociopolitical climate for language teaching on the island.

EDUC 821
Research on Second Language Acquisition and Bilingualism
Three Credits
Research on second-language teaching and learning in classrooms will be examined critically. Theoretical issues, research methodology, and substantive findings will be discussed, with a view to examining implications for the conduct of future research, research directions and teaching practices in the second-language classroom.

EDUC 822
Electronic Database and Information Services
Three Credits
The course focuses on development and use of online, e-books and CD – ROMS information services. The study of available databases in different fields is included. Emphasis is placed on strategies for the use of the thesaurus as a research tool. It includes Boolean search strategies and online database topics. Topics covered also include conducting online and CD-ROMS searches, client interview, developing, promoting and evaluating online services, as well as current trends.

EDUC 823
Advanced Organization of Bibliographical Resources
Three Credits
The course centers on the study of information resources organization in automated environments. Different classification systems and cataloging processes will be studied and analyzed, using automated library systems and electronic resources. Emphasis will be given to workshops using computerized systems in information centers.

EDUC 824
Seminar: Special Topics in Library and Information Services
Three Credits
The course focuses on advanced topics, trends, and problems in library and information services. Students will

be required to investigate selected topics related to their field and education in Puerto Rico.

EDUC 825
Anthropological and Cultural Concepts in the School Curriculum of Puerto Rico
Three Credits
Study and analysis of the most outstanding themes of cultural anthropology, folk arts and their relationship with the elementary and secondary school curriculum in Puerto Rico. Emphasis will be given to themes related to culture, religion, religious beliefs, myths, time and space, and the occurrence of these themes in folk arts of Puerto Rico.

Requisite: 15 doctoral credits approved.

EDUC 826
Research in Folk Arts and Fine Arts Education
Three Credits
The course is designed to provide doctoral students tools to develop research projects in themes related to the use of folk and fine arts in teaching other subjects, such as ethnomusicology, new discoveries of the effects of teaching arts on cognitive learning, folk arts as teaching strategies, the aesthetic and educational quality of artistic expressions, implications of high technology for teaching arts, and others. The student will design and complete a research paper related to one of the areas discussed in the class.

Requisite: EDUC 825

EDUC 827
Artistic and Cultural Expressions in Latin American and Caribbean Education
Three Credits
Study of one or more cultures of the Caribbean and/ or Latin America from the perspective of popular arts and their effect on the education of each country studied. A one week or longer trip to one of the countries selected will be organized o share experiences with teachers, students and artisans. Cultural and educational materials from Puerto Rico will be shared with the host country. A web of communication with other cultures and educational systems will be established. Upon returning, a conference will be organized to share experiences and knowledge with the students on campus. Each student will be responsible for trip expenses, unless as a group they have been able to raise funds to pay for the trip. Students who are not able to make the trip, will develop a virtual trip/investigation to be presented at the conference held by the group.

Requisites: EDUC 825, EDUC 826

EDUC 828
Seminar and Practicum in Higher Education
Three Credits
This course has been designed to offer the doctoral student the opportunity to apply his/her knowledge and skills by being exposed to higher education experiences at the undergraduate and/or graduate level. The doctoral candidate will have the support and technical assistance of a professor, an expert in the field, to teach, design a new course, evaluate a program, design a proposal for external funding and/or design and carry out a research project for the School of Education. This experience will prepare the doctoral student to work in the higher education environment. Eligibility for this course will be determined by the Dean and the recommendation of at least two doctoral degree faculty members.

Requisites: 30 doctoral credits approved

EDUC 901
Research Methods in Education
Three Credits
Basic concepts, methods, and problems in educational research are considered in this course, such as discovering the periodicals in one's fields, steps in the research process, developing research questions, design of instruments, methods of data collection and analysis, interpreting results, and writing research reports.

EDUC 902
Statistical Methods in Education
Three Credits
The course is designed to equip doctoral students with the essential statistical concepts for developing statistical designs in their own research. In addition to the fundamental principles of descriptive and inferential statistics, students will learn to use computers to compute data and to interpret computer-generated results produced by statistical software (SPSS). Course topics include measurements of central tendency, variability, relative position, and correlation; sampling and probability distributions; tests of significance; t-tests; analysis of variance; chi-square tests; and regression analysis. Analysis of data with SPSS is emphasized.

EDUC 903
Descriptive Research Methods
Three Credits
The course centers on the structure and process of descriptive research in education. The content includes the concepts of relationships, correlations and descriptive paradigms, descriptive sampling techniques, collection and organization of data, reliability and validity standards, descriptive methodology, and statistical analysis. The course

provides advanced doctoral students with the theoretical foundations necessary to understand qualitative inquiry and to enhance their abilities to conduct qualitative research and evaluation.

Requisite: EDUC 901 and EDUC 902

EDUC 904
Experimental Research Methods
Three Credits
The course deals with the structure and process of experimental research in education. It presents the concepts of probability, cause-effect relationships, and experimental or true experimental research studies that have internal and external validity. Students will learn to utilize correct experimental sampling techniques, collect and organize data systematically, adhere to acceptable reliability and validity standards in measurement, apply appropriate experimental methodology, perform inferential statistical analysis including t-tests with unmatched groups, analysis of variance (ANOVA) and analysis of covariance (ANCOVA), and infer cause-effect relationships. The student will master the language of experimental research, distinguish among various methodologies, conduct literature surveys that provide the foundation of investigation, critique experimental research, review the dissertation research process, and construct effective research proposals. Computer applications, logistical issues, and ethical considerations will also be examined.

EDUC 905
Dissertation I – Education
Three Credits
The first of three required courses of dissertation writing is designed to aid the student in producing a sound proposal that will include the review of the literature. The proposal will then be submitted to the dissertation committee, who must notify the doctoral candidate and the Faculty of the School of Education, in writing, that the proposal has been accepted.
Requisite: Satisfactorily pass the Comprehensive Examination.

EDUC 906
Dissertation II – Education
Three Credits
The second of three required courses of dissertation writing is designed to aid the student in producing an introduction, a review of the literature, a conceptual framework that will justify his/her investigation and a description of the methodology for the dissertation. Students should have started the collection of data for the investigation proposed. It is completed with the successful completion of the first three chapters of the dissertation, with the approval of the candidate's dissertation committee.

EDUC 907
Dissertation III – Education
Three Credits
The third of the three required dissertation courses is designed to produce a completed dissertation which includes the results of the data search, the conclusions, any editing of previous chapters, and the successful oral defense of the entire dissertation before the committee.

EDUC 908
Practicum in Research and Evaluation
Three Credits
The course is a planned intensive experience that integrates theory and practice through the conduction of evaluation studies. Prior to registration, the student should prepare a proposal for approval by the instructor and the Dean of the School of Education.

EDUC 909
Research Independent Study
Three Credits
The course is a planned intensive research experience in an area related to education and is designed to meet the students´ interests. Prior to registration, the student should prepare a proposal for approval by the instructor and the Dean of the School of Education.

EDUC 910
Planning, Research and the Grantsmanship Process
Three Credits
This course provides in-depth practical training in grant proposal writing in education. Through hands-on experience, students explore different types of funding sources, identify a funding source, develop a plan of action, and write a proposal according to the selection criteria or requirements of an identified funder. Intensive use of electronic methods (Worldwide Web, E-mail) to identify and obtain requests for funding and other information pertinent to grant writing is encouraged. Writing skills are also emphasized.

PHED 500
Advanced Evaluation and Care of Athletic Injuries I
Three Credits
The course deals with the theory and practice of procedures and techniques of evaluation, assessment and value of acute and chronic athletic injuries in the lower extremities. Non-traumatic pathology will be studied, as well as mechanical injury, muscular, skeletal and dermatological disorders.

PHED 501
Physiology of Exercise I
Three Credits
The course focuses on the study of mechanisms involved in the physiological and biochemical response to exercise.

PHED 502
Applied Sports Psychology: A Bio-Psychosocial Approach
Three Credits
The course centers on the study of psychology applied to the sports setting from a bio-psychosocial approach. Basic definitions and concepts of psychology are discussed at different levels. Socio-political implications of sports will be discussed, as well as the benefits of sports integration.

PHED 503
Theory and Methodology of Sports Training
Three Credits
The course centers on the analysis, interpretation, and application of data obtained from athletic performance during competition.

PHED 504
Sports Law and Physical Education
Three Credits
The course deals with important topics in sports law. The course will focus on legal aspects of education, sport training, health promotion and sports coaching. Analysis of articles and legal cases will be emphasized.

PHED 505
Biomechanical and Metrological Aspects of Exercise
Three Credits
The course focuses on qualitative and quantitative analysis of data of human movement during exercise processes. Analysis of mechanical and biological causes of movement under different conditions will be emphasized.

PHED 506
Physiology of Exercise II
Three Credits
The course deals with the study of the mechanisms that act upon the physiological and biomechanical responses to exercise and their relationship.

PHED 507
Training and Competitive Sports Psychology
Three Credits
The course focuses on analyzing psychological factors that affect positive outcomes in competitive sports. Topics include psychological preparation of athletes before a competition, the role of the coach and other professionals related to the training process, and the competition itself.

PHED 508
Analysis and Interpretation of Data in Sports Performance
Three Credits
The course prepares the candidate to analyze, interpret and apply data obtained in real sports situations and to analyze the individual's sports performance from a research perspective.

PHED 509
Nutrition for Health Fitness
Three Credits
The course deals with the role of nutrition in maintaining health and physical fitness. Topics include dietary guidelines, the role of carbohydrates, fats and protein in a healthy diet, and special needs for overweight individuals, children and athletes. Current research studies will be discussed.

PHED 510
Critical Issues in Health Fitness Management
Three Credits
This is a graduate seminar that comprises both formal and informal instructional elements. The professor, together with the class members, will select the key topical issues to the discussed. Additionally, expert guest speakers will be invited to share their knowledge on particular topics.

PHED 511
Assessment and Evaluation of Health Parameters
Three Credits
The course centers on the analysis of validity, reliability and objectivity as they relate to measurement techniques in health promotion programs. The primary focus is on assessment instruments used to determine health risks, as well as on understanding epidemiological and evaluation concepts in health and fitness.

PHED 512
Strategic Planning in Health Promotion
Three Credits
The course focuses on the introduction and development of critical skills necessary for effective planning, marketing and managing of strategic activities related to health promotion programs.

PHED 513
Administration and Issues in Athletic Training
Three Credits
The course deals with administrative and organizational processes of the athletic training profession. Candidates will analyze and discuss administrative, legal, financial and organizational issues. Emphasis will also be given to medical-legal aspects of athletic training.

PHED 514

Sports Injuries Rehabilitation
Three Credits
The course centers on analysis, discussion and research of topics related to the rehabilitation of athletic injures. Emphasis will be given to recent studies and techniques in the athletic training field. The course includes a laboratory practice.

PHED 515
Athletic Training Practicum
Three Credits
This is an academic experience that integrates theoretical knowledge with actual practice under the direct supervision of a certified athletic trainer. It includes practice in the prevention and treatment of acute and chronic athletic injuries as well as active participation in administrative and organizational areas of athletic training programs.
Requisites: PHED 501, CPR and First Aid Certificate

PHED 516
Evaluation and Care of Athletic Injuries II
Three Credits
The course focuses on theory and practice of identification, evaluation and treatment of acute and chronic athletic injuries. Topics include non-traumatic pathology, mechanisms of injuries, muscle-skeletal and dermatological disorders, mechanical principles of physical activities that cause trauma, and injuries due to overuse. The course includes laboratory practice.
Requisites: PHED 500, CPR and First Aid Certification

JOSÉ DOMINGO PÉREZ SCHOOL OF ENGINEERING

Héctor Rodríguez / Dean
José R. Deliz / Associate Dean
Daisy Roman / Administrative Director
Luz M. Vilches / Director, Engineering Advising Office (EAO) and Student Services

School of Engineering Distinguished Professor:
William R. Dawes, Jr., Ph.D. in Physics
University of Arizona

Recognizing the need for engineering professionals in Puerto Rico's accelerating economic environment, the Ana G. Méndez University System (AGMUS) Board of Trustees approved the establishment of a School of Engineering at the University of Turabo in August of 1990. The School of Engineering started with an initial enrollment of 75 students in the 1990-91 academic year. At present, the school offers associate degrees in engineering technology, bachelor of science degrees in Mechanical Engineering, Electrical Engineering, Computer Engineering, Industrial and Management Engineering, Civil Engineering and a Master of Science degrees in Administration of Telecommunications and Network Systems and in Mechanical Engineering. 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 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, which was occupied in August of 1992, includes classrooms, computer centers, instructional and research laboratories, offices for faculty and staff, meeting and conference rooms, offices for student organizations, and student study rooms. An additional 13,000 square feet were added in 2009 for a total of 63,000 square feet. This expansion houses offices, laboratories and classrooms for the Department of Electrical and Computer Engineering. In 2013 another 1,800 square feet were added for laboratory space for student projects.

The School of Engineering has four academic departments in addition to two institutes focused on associate and advanced technology degrees. The three academic departments are:

Department of Mechanical Engineering
Department of Electrical and Computer Engineering
Department of Industrial and Management Engineering
Department of Civil Engineering

Engineering Programs Accredited by the EAC Commission of ABET:

The following programs are accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, telephone: (410) 347-7700:

B.S. in Mechanical Engineering
B.S. in Electrical Engineering
B.S. in Industrial and Management Engineering
B.S in Computer Engineering

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

The mission of the School of Engineering is:

- To provide our students at all degree levels --associate, bachelor's 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.

TELECOMMUNICATIONS CURRICULUM

The School of Engineering offers academic programs leading to a master's of science degree in administration of telecommunications and network systems. The program curriculum consists of 33 credit hours distributed among four terms.

Full-time students who follow the recommended course schedules can complete the M.S. in telecommunications in two years. Program duration for part-time and transfer students will vary based upon course load and previous course work.

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 lower level. All current and former students enrolled in the School of Engineering are subject to these conditions.

GRADUATING STUDENT PROFILE

Students who complete the MS in telecommunications at the Universidad del Turabo develop, as a minimum, the following profile:

- An ability to design and implement telecommunications and networking systems.
- An ability to design and implement voice and convergence systems.
- An ability to design, implement and maintain wireless communication systems.
- An ability to administer and participate in strategic management and decision-making processes as related to telecommunications and networking support systems.
- A recognition of the need for, and an ability to engage in life-long learning.
- An understanding of professional and ethical responsibility.
- An ability to maintain quality of service in telecommunications and networking systems.
- An ability to translate business needs into technical solutions that can support the overall business process.
- An ability to create plans for future deployment of technology that could significantly contribute to enhance and solidify the position of the enterprise in the business sector it serves.
- An ability to provide guidance, leadership and management to those under his/her supervision as well as direction in terms of activities and projects, both future and current.
- An ability to assist management in the preparation of the strategic budget plan in the areas of technology deployment.

APPLICATION PROCESS AND ADMISSION POLICY

To be admitted, the candidate must fulfill the following requirements:

1. Possess a bachelor's degree from an accredited institution in Computer Sciences, Computational Mathematics, Computational Physics, Electrical or Computer Engineering or Business Administration with a concentration in Computer Sciences.
2. Approve with grade no lower than 3.00 the following courses: Calculus I, Calculus II, a course in Analytical Programming such as C++, Python or Pascal, and a basic statistics course.
3. Demonstrate an academic index of 2.75 overall in his degree and 3.00 in the major.
4. Submit an official transcript.
5. Three letters of recommendation.
6. Pay the admission quota of $25.00.
7. A successful interview with the Director of the Institute of Telecommunications.

GRADUATION REQUIREMENTS

To graduate with a master's degree in science in telecommunications and network administration, the candidate must fulfill the following requirements:

1. Complete all required courses as established by the institution with a minimum grade point average of 3.00.
2. Submit a successful thesis or network implementation project.
3. Transfer students must complete at least 18 credits at Universidad del Turabo. These credits must be in the area of core and specialization requirements.
4. All students admitted to the institution will be subjected to the graduation requirements prevailing during the academic year of their admission.
5. Students must have filed for graduation with the Registrar by the established date published in the academic calendar.
6. No graduation or degree certification document will be granted until evidence of compliance with economic and tuition responsibilities have been submitted.
7. All students requesting readmission will be subjected to the graduation requirements prevailing at the time of their readmission.

REQUISITES

The School of Engineering enforces the requisites in its master of science in telecommunications curriculum. Students who register in a course for which they do not have the Requisites will be dropped from the course before the end of the term, and will receive a grade of WA.

REPEATING COURSES

Students may repeat a course in order to improve their grade point average. Credit will be given for the higher grade, which will be used to compute the grade point average. If the grade of the second attempt is the same as the first, they will both be used for cumulative average, but only once for graduation average.

Courses required for graduation with grades of D or F must be repeated. A student in the Institute of Telecommunications must complete all courses needed to fulfill graduation requirements with a grade of C or better.

Students are permitted two attempts to complete any course needed to fulfill graduation requirements with a grade of C or better. Courses for which a student receives a "W", "WA", "WR", or "WN" are not counted as attempts. Courses for which a student receives a "WF" are counted as attempts.

In the case of the courses in the master's degree in telecommunications and networks administration, the student will be able to repeat a course a maximum of two (2) times. The student will be able to repeat a course for the second time only with the approval and recommendation of the Director.

If the student does not successfully complete the course on the second attempt, the student is suspended from the School of Engineering but may continue in other academic programs at Universidad del Turabo. Readmission to the School of Engineering is at the discretion of the Dean of the School of Engineering.

Students may not repeat a course until a grade has been given. The institution will authorize the student who has obtained a grade of C, D, F, W, WF, WA or WN in a course to repeat the course with financial assistance as long as the maximum of 150% of attempted credits has not been surpassed. Repeated courses will be considered in determining a student's satisfactory progress.

WITHDRAWALS

See the established university policy.

ACADEMIC ADVISING

Upon acceptance into the master's program in administration of telecommunications and network systems, all students will be assigned an academic advisor. Students are required to meet with their academic advisor each semester during pre-registration to discuss their progress and academic goals.

INSTITUTE OF TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY

Rafael M. Rivera, PhD / Director

Recognizing the importance of telecommunications in the modern enterprise, the Universidad del Turabo has established a unique organization within the School of Engineering, dedicated solely to the development of graduate and undergraduate degrees and certifications in this important discipline. The Institute of Telecommunications and Information Technology (IT+) has established the most advanced laboratory facilities in the Caribbean, dedicated to investigation and the learning and advancement of all disciplines comprised within, and related to, telecommunications.

VISION

The vision of IT+ is to become the most advanced center for education and investigation in the telecommunications area in Puerto Rico and the Caribbean, and therefore become the prime choice of students considering education in this area.

MISSION

The mission of the Institute of Telecommunications and Information Technology (IT+) is:

- To provide our students at all degree levels -associate, bachelor's, and graduate- with an excellent education that will allow them to be competitive at a national level in the fields of telecommunications and information technology and responsive to the needs of the communities they serve.
- To serve the business and academic communities through scholarly activities at all levels, through research and development activities, and programs addressing the needs of these communities, industry and government.

OBJECTIVES

The objectives of this graduate program are:

1. To develop professionals in the telecommunications field who will have the necessary skills to effectively perform in the process of designing, implementing and administering telecommunications systems in the modern enterprise.
2. To produce a graduate who will conduct him/herself with the highest sense of ethics and responsibility.
3. To develop a professional capable of directing the multiple and essential changes required by modern enterprise in the area of telecommunications and networking systems, thus contributing to the success and advancement of the corporation in the Americas.

The Faculty of the Institute of Telecommunications, through a set of measurable outcomes, and with the input of students and an Industry Curriculum Advisory Board, systematically measures the effectiveness of the program in satisfying its educational objectives and continuously strives to improve.

FACULTY

Yahya Masalmah / Associate Professor
PhD, Computing and Information Science and Engineering, Mayaguez

Jeffrey L. Duffany / Professor
PhD, Computer and Information Engineering, Stevens Institute of Technology

Rafael M. Rivera / Assistant Professor, Director
PhD, Information Systems, San Pablo, CEU, Spain

Jintao Xiong / Assistant Professor
PhD, Electrical and Computer Engineering, University of Massachusetts

Idalides Vergara/Assistant Professor
PhD, Computer Engineering, University of South Florida

TECHNICAL STAFF

Omar Rodríguez / Telecommunications Laboratories Supervisor
MS Telecommunications & Networks, Universidad del Turabo , DBA candidate

MASTER'S DEGREES

Science in Administration of Telecommunications and Network Systems

Description

The Master of Science degree in telecommunications and networks consists of 33 credits distributed as follows:

1. **Core and specialization courses: 21 credits**
   The core component includes introductory courses in telecommunications principles, local area networks, wide area networks, TCP/IP and convergence networks. Specialization courses expand into telephony and network design of both voice and data. It also includes a strong management component, concentrating on IT project management and telecommunications governance for information systems professionals. The graduate must design a complete convergence network under QoS parameters and prove its design in a laboratory environment.

2. **Elective courses: 6 credits**
   The student will take two additional courses from the Network Security, Governance, Internet or Telecommunications electives.

3. **Thesis or Network Project: 6 credits**
   The thesis dissertation will be on a research topic related to the effective implementation of telecommunications systems and its impact in the organization as directed by the appointed advisor. The project will cover all aspects of Network Design and Implementation.

The Master of Science degree in telecommunications and networks consists of 33 credits distributed as follows:

CURRICULUM

(33 credits; 2 years)

FIRST YEAR

1st Semester		**(9 credits)**
TCOM 521	Introduction to Networking	3
TCOM 513	IT Project Management	3
TCOM 503	Introduction to TCP/IP	3

2nd Semester		**(9 credits)**
NSEC 501	Network Security I	3
TCOM 514	Telecommunications Governance I	3
TCOM 556	IP Tel and Design and Implementation of Voice Networks	3

SECOND YEAR

1st Semester		**(9 credits)**
Elective	Elective I	3
Elective	Elective II	3
TCOM 507	Convergence of Technologies	3

2nd Semester*		**(6 credits)**
TCOM 607	Thesis Advisory	6
TCOM 606	Network Design Project	6

* Thesis or Design Project must be approved by Department and Advisor

Elective Courses

Telecommunications

TCOM 508	Implementation of Data Networks	3
TECOM 509	Protocol analysis	3

Internet

TCOM 511	Internet Technologies	3
TCOM 512	Internetworking Devices	3

Network Security

NSEC 502	Computer Security I	3
NSEC 521	Network Security II	3
NSEC 522	Computer Security II	3

Telecommunications Governance

TCOM 515	Telecommunications Governance II	3
TCOM 516	Telecommunications Management and Policy	3

Graduate Certificate in Network Security

1st Semester		**(9 credits)**
TCOM 521	Introduction to Networking	3
NSEC 501	Network Security I	3
NSEC 502	Computer Security I	3

2nd Semester		**(6 credits)**
NSEC 521	Network Security II	3
NSEC 522	Computer Security II	3

Science in Mechanical Engineering

INTRODUCTION

Mechanical engineers adapt the principles of science, mathematics, and art to create useful machinery for the benefit of humankind. The applications of mechanical engineering range from sophisticated systems; for example, aircraft, wind turbines and automobiles, to a simple stapler. It is currently positioned among the top-ten careers with the highest demand in the labor market. This is due to the versatility of the profession which allows mechanical engineers to work in different environments such as design, manufacturing, construction, operations, agriculture, maintenance, consulting, and management, among others.

In order to provide cost-effective options within the profession, the School of Engineering at Universidad del Turabo (UT) added to its academic offerings the Master's degree in Mechanical Engineering with two specialties to choose from: Renewable Energy and other alternative sources of energy (Alternative Energy), and Aerospace Engineering. You may also opt to not declare an area of specialization and follow a more traditional master's degree curriculum in mechanical engineering. All the options are approved by the Board of Education of Puerto Rico (CEPR).

ALTERNATIVE ENERGY SPECIALIZATION

UT becomes the first institution in Puerto Rico to offer the specialty in Alternative Energy as a graduate engineering program. In times of great relevance in energy issues, this curriculum will provide the student an excellent background to understand the needs, the technology and the future of the alternative energy industry. This specialization will benefit from an excellent collaboration with the Puerto Rico Energy Center (PREC), located on the grounds of the School of Engineering of UT. The collaboration aims to develop research, development, and design projects that will have a direct impact on Puerto Rico, an island that is blessed with renewable energy sources such as solar, aeolic (wind), and

oceanic. Given the multidisciplinary nature of the specialization in alternative energy, UT will accept applications for admission from students with Bachelor's degrees in any engineering discipline, the natural sciences, and mathematics. Non-mechanical engineers will be accepted on a conditional basis as explained below.

AEROSPACE ENGINEERING SPECIALIZATION

The specialization in aerospace engineering is motivated by the significant growth in the number of aerospace industries that have settled in Puerto Rico in the past 10 years. This specialization will provide the necessary tools in design, computational analysis, and fundamentals of aerospace engineering to advance the interests of this sector. Elective courses are divided into two areas: 1. Structures/Mechanics, and 2. Aerodynamics/Propulsion. You may select courses from both branches. This specialization requires a Bachelor's degree in mechanical engineering or aerospace engineering.

UNDECLARED SPECIALIZATION

If an area of specialization is not declared, a student will have the opportunity to collaborate with a professor in research in other areas of interest in mechanical engineering. There is currently an ongoing effort in the area of biomechanics which may be of high interest to many students.

CURRICULUM

The broad curriculum, which is based on 30 credits, provides the student the opportunity to achieve depth in the different theories and practices within this field. The student may choose to complete a research thesis (Plan 1) or a design/development project with report (Plan 2). These are graduation requirements for the degree of Master of Science (M.S.). The M.S. is the preferred choice if the student wishes to pursue interesting projects and perhaps continue doctoral studies. A third option is to only take courses (Plan 3) to obtain the degree of Master of Engineering (M.Eng.). The M.Eng., which does not require a thesis or project report, is particularly attractive for professionals who are primarily interested in obtaining high-level knowledge in their field to become more competitive and successful in the workplace.

Four compulsory courses are required in all modes: Finite Element Analysis, Advanced Mathematics for Engineers, and Aerodynamics I. The fourth required course depends on the selected specialty. Please refer to the curricula of each specialty to see the entire course offerings.

FACULTY

The master's program is founded on a solid Bachelor of Science degree in Mechanical Engineering program that is accredited by ABET since 2003. The full-time faculty that will teach regularly in the master's program consists of a core of nine full-time professors from Mechanical Engineering and the PREC Research Director, from Electrical Engineering, who will teach some courses in the Alternative Energy specialization. In alphabetical order (last name), the faculty members are:

Dr. Roberto Callarotti, PhD MIT (EE; PREC Research Director)
Dr. Gerardo Carbajal, PhD Rensselaer Polytechnic
Dr. Eduardo Castillo, PhD Rensselaer Polytechnic
Dr. Amaury Malavé, PhD University of Wisconsin-Madison (PREC Executive Director)
Dr. Juan C. Morales, PhD UPR-RUM (ME Department Head)
Dr. Edward Romero, PhD Michigan Tech (Master's Program Coordinator, eromero@suagm.edu)
Dr. Mary C. Ruales, PhD Florida International
Dr. Héctor Rodríguez, PhD Virginia Tech

Faculty Collaboration

Three faculty members from external institutions have expressed their support to enrich the program through exchange of faculty and students, summer research activities for students, course development, and course teaching through non-traditional delivery modes. In alphabetical order (last name), the faculty members are:

Dr. Raúl Bayoán Cal
Assistant Professor, Department of Mechanical and Materials Engineering at Portland State University

Dr. Luciano Castillo
Don-Kay-Clay Distinguished Engineering Chair in Wind Energy at Texas Tech University President and Director of the National Wind Resource Center (NWRC)

Dr. Zvi Rusak
Professor, Department of Mechanical, Aerospace and Nuclear Engineering at Rensseleaer Polytechnic University

ADMISSIONS REQUIREMENTS

The internet page for admissions is the following:

http://ut.suagm.edu/es
Please be advised that the essay is required. On the other hand, the interview requirement and the exam requirement (EXADEP, GRE) are not necessary for the Mechanical Engineering Master's Program.

Essay Guidelines

The essay gives us an opportunity to get to know you, the applicant, a little bit better. You may use the following four points as guidelines in writing the essay which should be no more than two pages in length.

1. Career Goals: Please provide your career goals. Where do you see yourself in 10 years?
2. Academic Objectives: Please explain why you want to attend graduate school and the particular specialization you have selected at UT. Explain how it fits within your career goals.
3. Academic Achievements: Please discuss your academic background and your academic achievements.
4. Academic Interests: Describe your academic interests. If you have talked to a professor that you wish to work with, please expand on this issue and the possibility of conducting a thesis or project.

Science in Mechanical Engineering – General Program

Plan 1 (M.S. degree-Thesis)
Plan 1 is an excellent option for full-time students with a strong interest in research

Total Courses	**30 credits**
Required Courses	**12 credits**
Specialization Courses	**12 credits**
Degree Requirement	**6 credits**

Required Courses (select 4 courses: 12 cr.)

MEEN 501	Finite Element Analysis	3
MEEN 601	Advanced Mathematics for Engineers	3
MEEN 602	Advanced Mechanics of Materials	3
MEEN 604	Aerodynamics 1: Incompressible Flow	3

Specialization Courses (select 4 courses: 12 cr.)

MEEN 603	Advanced Fluid Mechanics	3
MEEN 671	Advanced Heat Conduction	3
MEEN 674	Micro & Nano Heat Transfer	3
MEEN 678	Advanced Topics	3
MEEN 679	Independent Study	3
*MEEN 502	Aircraft Design	3
*MEEN 611	Composite Materials	3
*MEEN 616	Introduction to Aeroelasticity	3
*MEEN 623	Multi-Scale Turbulence: Aeronautics	3
*MEEN 641	Sustainable Energy: : Solar, Nuclear, Wind Energy Fuel Cell & Geothermal	3
*MEEN 672	Mechanical Vibrations	3
*MEEN 673	Computational Fluid Dynamics (CFD)	3
*MEEN 675	MEMS and Energy Harvesting	3
*MEEN 676	Design Optimization	3
*MEEN 681	Introduction to Biomechanics	3
*MEEN 682	Systems Engineering	3
*MEEN 683	Friction, Wear and Lubrication	3
*MEEN 684	Advanced Tribology	3
*	(Also available in other specialization areas)	

Degree Requirements

MEEN 697	MS Thesis	6

Plan 2 (M.S. degree-Special Project)
Plan 2 is ideal to conduct design and development in an area of particular interest

Total Courses	**30 credits**
Required Courses	**12 credits**
Specialization Courses	**15 credits**
Degree Requirement	**3 credits**

Required Courses (select 4 courses: 12 cr.)

MEEN 501	Finite Element Analysis	3
MEEN 601	Advanced Mathematics for Engineers	3
MEEN 602	Advanced Mechanics of Materials	3
MEEN 604	Aerodynamics 1: Incompressible Flow	3

Specialization Courses (select 5 courses: 15 cr.)

MEEN 603	Advanced Fluid Mechanics	3
MEEN 671	Advanced Heat Conduction	3
MEEN 674	Micro & Nano Heat Transfer	3
MEEN 678	Advanced Topics	3
MEEN 679	Independent Study	3
*MEEN 502	Aircraft Design	3
*MEEN 611	Composite Materials	3
*MEEN 616	Introduction to Aeroelasticity	3
*MEEN 623	Multi-Scale Turbulence: Aeronautics	3
*MEEN 641	Sustainable Energy: Solar, Nuclear, Wind Energy Fuel Cell & Geothermal	3
*MEEN 672	Mechanical Vibrations	3
*MEEN 673	Computational Fluid Dynamics (CFD)	3
*MEEN 675	MEMS and Energy Harvesting	3
*MEEN 676	Design Optimization	3
*MEEN 681	Introduction to Biomechanics	3
*MEEN 682	Systems Engineering	3
*MEEN 683	Friction, Wear and Lubrication	3
*MEEN 684	Advanced Tribology	3
*	(Also available in other specialization areas)	

Degree Requirements

MEEN 694	Special Project	3

Plan 3 (M. Eng. degree)
Plan 3 caters primarily to working professionals who seek highly specialized knowledge

Required Courses	**12 credits**
Specialization Courses	**18 credits**

Required Courses (select 4 courses: 12 cr.)

MEEN 501	Finite Element Analysis	3
MEEN 601	Advanced Mathematics for Engineers	3
MEEN 602	Advanced Mechanics of Materials	3
MEEN 604	Aerodynamics 1: Incompressible Flow	3

Specialization Courses (select 6 courses: 18 cr.)

MEEN 603	Advanced Fluid Mechanics	3
MEEN 671	Advanced Heat Conduction	3
MEEN 674	Micro & Nano Heat Transfer	3
MEEN 678	Advanced Topics	3
MEEN 679	Independent Study	3
*MEEN 502	Aircraft Design	3
*MEEN 611	Composite Materials	3
*MEEN 616	Introduction to Aeroelasticity	3
*MEEN 623	Multi-Scale Turbulence: Aeronautics	3
*MEEN 641	Sustainable Energy: Solar, Nuclear, Wind Energy Fuel Cell & Geothermal	3
*MEEN 672	Mechanical Vibrations	3
*MEEN 673	Computational Fluid Dynamics (CFD)	3
*MEEN 675	MEMS and Energy Harvesting	3
*MEEN 676	Design Optimization	3
*MEEN 681	Introduction to Biomechanics	3
*MEEN 682	Systems Engineering	3
*MEEN 683	Friction, Wear and Lubrication	3
*MEEN 684	Advanced Tribology	3
*	(Also available in other specialization areas)	

Science in Mechanical Engineering with specialization in Alternative Energy

Plan 1 (M.S. degree-Thesis). Plan 1 is an excellent option for full-time students with a strong interest in research

Total Courses	**30 credits**
Required Courses	**12 credits**
Specialization Courses	**12 credits**
Degree Requirement	**6 credits**

Required Courses (select 4 courses: 12 cr.)

MEEN 501	Finite Element Analysis	3
MEEN 601	Advanced Mathematics for Engineers	3
MEEN 604	Aerodynamics 1: Incompressible Flow	3
MEEN 641	Sustainable Energy: : Solar, Nuclear, Wind Energy Fuel Cell & Geothermal	3

Specialization Courses (select 5 courses: 15 cr.)

MEEN 642	Grid Integration & Sustainable Systems	3
MEEN 643	Energy Management, Practice, Policy & Ethics	3
MEEN 644	Photovoltaic Energy Conversion	3
MEEN 645	Wind Energy	3
MEEN 646	Solar Refrigeration and Air Conditioning	3
MEEN 648	Advanced Topics in Alternative Energy	3
MEEN 651	Ocean Energy	3
MEEN 652	Biofuels	3
*MEEN 611	Composite Materials	3
*MEEN 616	Introduction to Aeroelasticity	3
*MEEN 623	Multi-Scale Turbulence: Aeronautics	3
*MEEN 672	Mechanical Vibrations	3
*MEEN 673	Computational Fluid Dynamics (CFD)	3
*MEEN 675	MEMS and Energy Harvesting	3
*MEEN 676	Design Optimization	3
*MEEN 681	Introduction to Biomechanics	3
*MEEN 682	Systems Engineering	3
*MEEN 683	Friction, Wear and Lubrication	3
*MEEN 684	Advanced Tribology	3
*	(Also available in other specialization areas)	

Degree Requirements

MEEN 694	Special Project	3

Plan 2 (M.S. degree-Special Project). Plan 2 is ideal to conduct design and development in an area of particular interest

Total Courses	**30 credits**
Required Courses	**12 credits**
Specialization Courses	**15 credits**
Degree Requirement	**3 credits**

Required Courses (select 4 courses: 12 cr.)

MEEN 501	Finite Element Analysis	3
MEEN 601	Advanced Mathematics for Engineers	3
MEEN 604	Aerodynamics 1: Incompressible Flow	3
MEEN 641	Sustainable Energy: : Solar, Nuclear, Wind Energy Fuel Cell & Geothermal	3

Specialization Courses (select 5 courses: 15 cr.)

MEEN 642	Grid Integration & Sustainable Systems	3
MEEN 643	Energy Management, Practice, Policy & Ethics	3
MEEN 644	Photovoltaic Energy Conversion	3
MEEN 645	Wind Energy	3
MEEN 646	Solar Refrigeration and Air Conditioning	3
MEEN 648	Advanced Topics in Alternative Energy	3
MEEN 651	Ocean Energy	3
MEEN 652	Biofuels	3
*MEEN 611	Composite Materials	3
*MEEN 616	Introduction to Aeroelasticity	3
*MEEN 623	Multi-Scale Turbulence: Aeronautics	3
*MEEN 672	Mechanical Vibrations	3
*MEEN 673	Computational Fluid Dynamics (CFD)	3
*MEEN 675	MEMS and Energy Harvesting	3
*MEEN 676	Design Optimization	3

*MEEN 681	Introduction to Biomechanics	3
*MEEN 682	Systems Engineering	3
*MEEN 683	Friction, Wear and Lubrication	3
*MEEN 684	Advanced Tribology	3
*	(Also available in other specialization areas)	

Degree Requirements

MEEN 694	Special Project	3

Plan 3 (M. Eng. degree)
Plan 3 caters primarily to working professionals who seek highly specialized knowledge

Total Courses	**30 credits**
Required Courses	**12 credits**
Specialization Courses	**18 credits**

Required Courses (select 4 courses: 12 cr.)

MEEN 501	Finite Element Analysis	3
MEEN 601	Advanced Mathematics for Engineers	3
MEEN 604	Aerodynamics 1: Incompressible Flow	3
MEEN 641	Sustainable Energy: : Solar, Nuclear, Wind Energy Fuel Cell & Geothermal	3

Specialization Courses (select 6 courses: 18 cr.)

MEEN 642	Grid Integration & Sustainable Systems	3
MEEN 643	Energy Management, Practice, Policy & Ethics	3
MEEN 644	Photovoltaic Energy Conversion	3
MEEN 645	Wind Energy	3
MEEN 646	Solar Refrigeration and Air Conditioning	3
MEEN 648	Advanced Topics in Alternative Energy	3
MEEN 651	Ocean Energy	3
MEEN 652	Biofuels	3
*MEEN 611	Composite Materials	3
*MEEN 616	Introduction to Aeroelasticity	3
*MEEN 623	Multi-Scale Turbulence: Aeronautics	3
*MEEN 672	Mechanical Vibrations	3
*MEEN 673	Computational Fluid Dynamics (CFD)	3
*MEEN 675	MEMS and Energy Harvesting	3
*MEEN 676	Design Optimization	3
*MEEN 681	Introduction to Biomechanics	3
*MEEN 682	Systems Engineering	3
*MEEN 683	Friction, Wear and Lubrication	3
*MEEN 684	Advanced Tribology	3
*	(Also available in other specialization areas)	

Science in Mechanical Engineering with specialization in Aerospace Engineering

Plan 1 (M.S. degree-Thesis)
Plan 1 is an excellent option for full-time students with a strong interest in research

Total Courses	**30 credits**
Required Courses	**12 credits**
Specialization Courses	**12 credits**
Degree Requirement	**6 credits**

Required Courses (select 4 courses: 12 cr.)

MEEN 501	Finite Element Analysis	3
MEEN 502	Aircraft Design	3
MEEN 601	Advanced Mathematics for Engineers	3
MEEN 604	Aerodynamics 1: Incompressible Flow	3

Specialization Courses (select 4 courses: 12 cr.)

MEEN 612	Aerospace Structural Analysis	3
MEEN 613	Flight Mechanics	3
MEEN 614	Propulsion Systems	3
MEEN 615	Aerodynamics II: Compressible Flow	3
MEEN 621	Boundary Layers	3
MEEN 624	Combustion	3
MEEN 628	Advanced Topics in Aerospace	3
MEEN 629	Independent Study in Aerospace	3
*MEEN 611	Composite Materials	3
*MEEN 616	Introduction to Aeroelasticity	3
*MEEN 623	Multi-Scale Turbulence: Aeronautics	3
*MEEN 672	Mechanical Vibrations	3
*MEEN 673	Computational Fluid Dynamics (CFD)	3
*MEEN 676	Design Optimization	3
*MEEN 682	Systems Engineering	3
*MEEN 683	Friction, Wear and Lubrication	3
*MEEN 684	Advanced Tribology	3
*	(Also available in other specialization areas)	

Degree Requirements

MEEN 697	MS Thesis	6

Plan 2 (M.S. degree-Special Project).
Plan 2 is ideal to conduct design and development in an area of particular interest

Total Courses	**30 credits**
Required Courses	**12 credits**
Specialization Courses	**15 credits**
Degree Requirement	**3 credits**

Required Courses (select 4 courses: 12 cr.)

MEEN 501	Finite Element Analysis	3
MEEN 502	Aircraft Design	3
MEEN 601	Advanced Mathematics for Engineers	3

MEEN 604	Aerodynamics 1: Incompressible Flow	3

Specialization Courses (select 5 courses: 15 cr.)

MEEN 612	Aerospace Structural Analysis	3
MEEN 613	Flight Mechanics	3
MEEN 614	Propulsion Systems	3
MEEN 615	Aerodynamics II: Compressible Flow	3
MEEN 621	Boundary Layers	3
MEEN 624	Combustion	3
MEEN 628	Advanced Topics in Aerospace	3
MEEN 629	Independent Study in Aerospace	3
*MEEN 611	Composite Materials	3
*MEEN 616	Introduction to Aeroelasticity	3
*MEEN 623	Multi-Scale Turbulence: Aeronautics	3
*MEEN 672	Mechanical Vibrations	3
*MEEN 673	Computational Fluid Dynamics (CFD)	3
*MEEN 676	Design Optimization	3
*MEEN 682	Systems Engineering	3
*MEEN 683	Friction, Wear and Lubrication	3
*MEEN 684	Advanced Tribology	3
*	(Also available in other specialization areas)	

Degree Requirements

MEEN 694	Special Project	3

Plan 3 (M. Eng. degree)
Plan 3 caters primarily to working professionals who seek highly specialized knowledge

Total Courses	**30 credits**
Required Courses	**12 credits**
Specialization Courses	**18 credits**

Required Courses (select 4 courses: 12 cr.)

MEEN 501	Finite Element Analysis	3
MEEN 502	Aircraft Design	3
MEEN 601	Advanced Mathematics for Engineers	3
MEEN 604	Aerodynamics 1: Incompressible Flow	3

Specialization Courses (select 6 courses: 18 cr.)

MEEN 612	Aerospace Structural Analysis	3
MEEN 613	Flight Mechanics	3
MEEN 614	Propulsion Systems	3
MEEN 615	Aerodynamics II: Compressible Flow	3
MEEN 621	Boundary Layers	3
MEEN 624	Combustion	3
MEEN 628	Advanced Topics in Aerospace	3
MEEN 629	Independent Study in Aerospace	3
*MEEN 611	Composite Materials	3
*MEEN 616	Introduction to Aeroelasticity	3
*MEEN 623	Multi-Scale Turbulence: Aeronautics	3
*MEEN 672	Mechanical Vibrations	3
*MEEN 673	Computational Fluid Dynamics (CFD)	3
*MEEN 676	Design Optimization	3
*MEEN 682	Systems Engineering	3
*MEEN 683	Friction, Wear and Lubrication	3
*MEEN 684	Advanced Tribology	3
*	(Also available in other specialization areas)	

Science in Computer Engineering

The master's program provides a rigorous educational experience in computer engineering. The program affords an opportunity for practicing engineers and others to advance their technical competencies and develop professionally.

Each student is required to take five (5) designated core courses and complete the remaining coursework requirements by selecting from a wide range of electives in distributed systems, high performance computing, network security, computers, software engineering, and other department approved electives. Students may choose one of three study plans: M.S. with thesis, M.S. with project, or M.Eng. course-only. Successful completion of an M.S. degree will uniquely prepare graduates for future doctoral studies or challenging careers in industry; an M.Eng. Degree will greatly enhance professional qualifications for career advancement or future academic endeavors.

OBJECTIVES

1. To provide a solid foundation in major areas of computer engineering that will empower graduates to become intellectual explorers.
2. To produce graduates who are able to adapt to changes in technology through continuous personal and professional development.
3. To produce graduates possessing a high sense of professionalism to satisfy the needs of stakeholders.
4. To prepare graduates who are able to deliver into a specialized body of knowledge so as to produce scholarly research of high intellectual and scientific quality (thesis option).
5. To prepare graduates who are able to apply specialized knowledge to solve highly complex problems of practical importance (project option).
6. To prepare graduates who are able to apply specialized knowledge to solve highly complex problems of practical importance.

CURRICULUM

Total Courses	**30 credits**
Required Courses	**15 credits**
Specialization Courses	**15 credits**

Required Courses **(select 5 courses: 15 crs.)**

CPEN 502	Advanced Analysis and Design of Algorithms	3

CPEN 503	Computer and Network Security	3
CPEN 504	Advanced Computer Architectures	3
CPEN 505	Database Management Systems	3
CPEN 550	Operating Systems Programming	3

Specialization Courses (select 5 courses: 15 crs.)

CPEN 511	Distributed Systems	3
CPEN 520	Numerical Optimization	3
CPEN 531	Secure Software Systems	3
CPEN 552	Computer Graphics	3
CPEN 640	Embedded Systems	3
CPEN 696	M.S. Project	3
CPEN 697	M.S. Thesis	6

Science in Electrical Engineering

The master's program provides a rigorous educational experience in electrical engineering. The program affords an opportunity for practicing engineers and others to advance their technical competencies and develop professionally.
Each student is required to take five (5) designated core courses and complete the remaining coursework requirements by selecting from a wide range of electives in power systems, control systems, electronics, computers, digital signal processing, and other department approved electives. Students may choose one of three study plans: M.S. with thesis, M.S. with project, or M.Eng. course-only. Successful completion of an M.S. degree will uniquely prepare graduates for future doctoral studies or challenging careers in industry; an M.Eng. degree will greatly enhance professional qualifications for career advancement or future academic endeavors.

OBJECTIVES

1. To provide a solid foundation in major areas of computer engineering that will empower graduates to become intellectual explorers.
2. To produce graduates who are able to adapt to changes in technology through continuous personal and professional development.
3. To produce graduates possessing a high sense of professionalism to satisfy the needs of stakeholders.
4. To prepare graduates who are able to deliver into a specialized body of knowledge so as to produce scholarly research of high intellectual and scientific quality (thesis option).
5. To prepare graduates who are able to apply specialized knowledge to solve highly complex problems of practical importance (project option).
6. To prepare graduates who are able to apply specialized knowledge to solve highly complex problems of practical importance.

CURRICULUM

Total Courses	**30 credits**
Required Courses	**15 credits**
Specialization Courses	**15 credits**

Required Courses (select 5 courses: 15 crs.)

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 550	Digital Filters	3

Specialization Courses (select 5 courses: 15 crs.)

ELEN 511	Power System Dynamics and Control	3
ELEN 520	Digital Control Systems	3
ELEN 551	Detection and Estimation Theory	3
ELEN 632	Quantum Electronics	3
ELEN 650	Digital Image Processing	3
ELEN 651	Adaptive Signal Processing	3
ELEN 696	M.S. Project	3
ELEN 697	M.S. Thesis	6

COURSE DESCRIPTIONS

CPEN 502
Advanced Analysis and Design of Algorithms
Three Credits
Three credit-hours. Three hours of lecture per week. This course covers the fundamentals of analysis and design of algorithms, complexity of algorithms, searching, sorting, pattern matching, combinatorial problems, and graph algorithms.

Requisite: COM 315

CPEN 503
Computer and Network Security
Three Credits
Three credit-hours. Three hours of lecture per week. This course covers the basics of computer and network security. Topics in computer security include cryptography; security of computer programs, databases, operating systems; and multi-level security. Topics in network security include confidentiality, authentication, secure electronic transactions, IP security, intrusion detection, and firewalls.

Requisite: CPEN 481

CPEN 504
Advanced Computer Architectures
Three Credits
Three credit-hours. Three hours of lecture per week. This course provides an overview of high-performance computing: processor architectures, memory, input/output

devices, interfaces, and storage area networks; parallel computing, grid and cluster computing, and Beowulf systems.

Requisite: CPEN 444

CPEN 505
Database Management Systems
Three Credits
Three credit-hours. Three hours of lecture per week. This course introduces techniques for building relational database management systems (DBMS): database architectures, storage, buffer management, indexing, algorithms, concurrency, query optimization, benchmarking, object-oriented databases, data warehousing, and data mining.

Requisite: CPEN 455

CPEN 511
Distributed Systems
Three Credits
Three hours of lecture per week. This course covers several topics in distributed systems: 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.

Requisite: CPEN 444

CPEN 520
Numerical Optimization
Three Credits
Three hours of lecture per week. This course introduces the central ideas behind the algorithms for the numerical solution of both unconstrained and constrained optimization problems.

Requisite: COMP 411

CPEN 531
Secure Software Systems
Three Credits
Three credit-hours. Three hours of lecture per week. This course introduces the approaches and tools used to build secure software systems. The course covers architectural approaches to building secure software, software analysis, language-based approaches to building secure software, and run-time enforcement of security policies.

Requisite: CPEN 503

CPEN 550
Operating Systems Programming
Three Credits
Three credit-hours. Three hours of lecture per week. This is an advanced course in operating systems (OS). It focuses on the design and construction of a modern OS kernel. Topics include booting, system calls, process and thread abstractions, scheduling, synchronization, interprocess communication, memory management, file systems, device drivers, and network management.

Requisite: CPEN 452

CPEN 552
Computer Graphics
Three Credits
Three credit-hours. Three hours of lecture per week. This course is a hands-on class on advanced computer graphics. It covers major aspects of digital image generation: geometric modeling, computer animation, and rendering.

Requisite: ENGI 223

CPEN 640
Embedded Systems
Three Credits
Three hours of lecture per week. This is an introductory course in embedded systems. The course is project-oriented and emphasizes application issues, system specifications and modeling, system languages, synthesis, and verification.

Requisite: ELEN 442

CPEN 696
M.S. Project
Three Credits
Three credit-hours. Comprehensive study of a computer engineering problem and presentation of a project.

Requisite: Permission of the project advisor.

CPEN 697
M.S. Thesis
Six Credits
Six credit-hours. Research in an area of computer engineering and presentation of a thesis.

Requisite: Permission of the thesis advisor.

ELEN 502
Advanced Linear Systems
Three Credits
Three credit-hours. Three hours of lecture per week. This course provides the mathematical foundations of system theory that play an important role in control, communications, signal processing, information theory,

networks and Internet applications, among others. Specifically, this course will delve into the theory of linear dynamical systems in both continuous and discrete time. A strong background in linear algebra is required.

Requisite: ELEN 415

ELEN 503
Solid State Electronics
Three Credits
Three credit-hours. Three hours of lecture per week. This course covers the physics of solid-state electronic devices, including p-n junctions, MOS devices, field-effect transistors, and bipolar transistors. In addition, principles of optoelectronics, integrated circuits, and high frequency and high power devices will be discussed.

Requisite: ELEN 431

ELEN 505
Probability and Random Processes
Three Credits
Three credit-hours. Three hours of lecture per week. This course introduces a broad range of topics such as random vectors, random sequences, random processes, filtering of random processes, correlation, power spectrum density, and response of linear systems to random inputs.

Requisite ELEN 360

ELEN 510
Advanced Power System Analysis
Three Credits
Three credit-hours. Three hours of lecture per week. This course introduces the theoretical framework associated with short circuit, power flow, and stability analysis. The course presents the models, techniques, and tools used for these types of studies with a practical perspective by emphasizing their application to the comprehensive analysis of a typical test system.

Requisite: ELEN 480

ELEN 511
Power System Dynamics and Control
Three Credits
Three credit-hours. Three hours of lecture per week. This course covers the dynamic processes in power systems including regulation of turbines, voltage control, system stability, and protection of transmission lines.

Requisite: ELEN 480

ELEN 520
Digital Control Systems
Three Credits
Three credit-hours. Three hours of lecture per week. This course introduces the student to the fundamental theory of digital control and sampled data control systems.

Requisite: ELEN 415

ELEN 550
Digital Filters
Three Credits
Three credit-hours. Three hours of lecture per week. This course presents the analysis and design techniques of modern digital signal processing for a wide variety of applications. The course will cover discrete-time signal analysis, fast Fourier transforms, and the design and implementation of digital filters.

Requisite: ELEN 415

ELEN 551
Detection and Estimation Theory
Three Credits
Three credit-hours. Three hours of lecture per week. This course introduces two fundamental problems in statistical signal processing, namely, detection and estimation. The first part of the course covers statistical decision theory, hypothesis testing, and performance analysis. The second part of the course deals with parameter estimation theory and optimal estimators.

Requisite: ELEN 505

ELEN 632
Quantum Electronics
Three Credits
Three credit-hours. Three hours of lecture per week. This course introduces the basic principles of quantum mechanics as they apply to semiconductor laser devices.

Requisite: ELEN 505

ELEN 650
Digital Image Processing
Three Credits
Three hours of lecture per week. This is an introductory course in digital image processing. It emphasizes general principles and presents the most common techniques for image processing. It covers image acquisition and display, color representations, sampling and quantization, point operations, contrast/color enhancement, image restoration/reconstruction, and feature extraction.

Requisite: ELEN 550

ELEN 651
Adaptive Signal Processing
Three Credits
Three hours of lecture per week. This course introduces some practical aspects of signal processing as they relate to adaptive systems. Applications of adaptive systems can be encountered in communications, radar, sonar, seismology, navigation systems, and biomedical engineering. This course will present the basic principles of adaptation, adaptive signal processing algorithms, and application examples.

Requisite: ELEN 550

ELEN 696
M.S. Project
Three Credits
Comprehensive study of an electrical engineering problem and presentation of a project.

Requisite: Permission of the project advisor.

ELEN 697
M.S. Thesis
Six Credits
Six credit-hours. Research in an area of electrical engineering and presentation of a thesis.

Requisite: Permission of the thesis advisor.

MEEN 501
Finite Element Analysis
Three Credits
Three hours of lecture/studio per week. Immersion into the use of the finite element method (FEM) to solve complex, real-world structural analysis and heat transfer problems. Applications using special-purpose finite element programs with emphasis on general-purpose (commercial) finite element software.

Requisites: MEEN 601, MEEN 602, MATH 350, MEEN 425

MEEN 502
Aircraft Design
Three Credits
Three hours of lecture per week; 45 hours per semester. Required introductory course for the aerospace engineering specialization. The objective of the course is to familiarize mechanical engineering master's students with aeronautical engineering fundamentals and their application in aircraft design. Focus on steps in preliminary design of general aviation aircraft with emphasis on the iterative aspects of design.

Requisites: ENGI 305, ENGI 318

MEEN 601
Advanced Mathematics for Engineers
Three Credits
This advanced course in mathematics analyzes the functions of a complex variable and the calculus of residues. It also covers subjects such as ordinary differential equations, partial differential equations, Bessel and Legendre functions, and the Sturm-Liouville theory. Applications to engineering problems are presented.

Requisites: MATH 222, MATH 395

MEEN 602
Advanced Mechanics of Materials
Three Credits
The present course presents an overview of stress analysis, strain analysis, the generalized Hooke's law, plain stress and strain, energy methods, unsymmetrical bending, torsion of thin walled beams and elastic stability.

Requisite: ENGI 244

MEEN 603
Advanced Fluid Mechanics
Three Credits
This course studies the mass conservation, momentum, and energy equations for continua. Exact solution to the Navier-Stokes equations is presented. Circulation and vorticity theorems, potential flow, surface waves and an introduction to turbulence and compressible flow are also covered.

Requisite: ENGI 305

MEEN 604
Aerodynamics I: Incompressible Flow
Three Credits
Three hours of lecture per week; 45 hours per semester. Required introductory course for all mechanical engineering master's students. Review of incompressible fluid mechanics. Aerodynamic performance of wings and bodies in sub-sonic regime. The contents divided into three components: subsonic potential flows, including source/vortex panel methods; viscous flows, including laminar and turbulent boundary layers; aerodynamics of airfoils and wings, including thin airfoil theory, lifting line theory, and panel method/interacting boundary layer methods.

Requisite: ENGI 305

MEEN 611
Composite Materials
Three Credits
Properties and microstructure of high-strength fiber materials (glass, carbon, polymer, ceramic fibers) and matrix materials (polymer, metal, ceramic, and carbon matrices).

Specific strength and stiffness of high-performance composites. Rule of mixtures. Stress, strain transformations. Elastic properties of a single orthotropic material. Laminated plate theory. Failure criteria. Design of composite structures and components. Manufacturing processes.

Requisite: ENGI 318

MEEN 612
Aerospace Structural Analysis
Three Credits
Beam structures under combined shear, bending and torsional loads. Semi-monocoque structures: idealizations involving wings, ribs and fuselage bulkheads. Effects of taper and cutouts in stiffened shell structures, shear deformations and warping, location of elastic axis in open and closed sections, torsion of multicell sections. Stability analysis of columns: elastic restraints, energy methods. Stability of plate structures, beam-column analysis, coupled bending-torsion instabilities.

Requisite: ENGI 318

MEEN 613
Flight Mechanics
Three Credits
Performance, stability, and control of airplanes. General equations of motion for rigid aircrafts, aerodynamic forces and moments, quasi-steady and non-steady flight paths. Generalized performance methods and flight envelopes. Small disturbance theory, stability derivatives, longitudinal and lateral static stability. Basic airplane motion, response to control actions and to atmosphere disturbances. Simulation of aircraft performance and dynamics.

Requisite: ENGI 305

MEEN 614
Propulsion Systems
Three Credits
Analysis of thrust generation: propeller theory, combustion, reciprocating engines, gas turbines. One-dimensional compressible flow, Prandtl-Meyer expansions and oblique shock waves; application to diffusers and rocket nozzles. Linearized supersonic flow.

Requisite: MEEN 615

MEEN 615
Aerodynamics II: Compressible Flow
Three Credits
Three hours of lecture per week; 45 hours per semester. This course studies the aerodynamic performance of wings and bodies in compressible flow. Study the theory of supersonic and hypersonic airfoil.

Requisite: MEEN 604

MEEN 616
Introduction to Aeroelasticity
Three Credits
Three hours of lecture per week; 45 hours per semester. Introduction to aeroelasticity and loads. Static aeroelasticity. Effect of wing flexibility on lift distribution, divergence, aileron reversal and control effectiveness. Unsteady aerodynamic oscillation of airfoil in incompressible flow. Dynamic aeroelasticity, flutter calculations. Testing techniques.

Requisite: MEEN 464 or MEEN 672

MEEN 621
Boundary Layers
Three Credits
Boundary Layer Theory. Concepts of laminar and turbulent flow. Boundary-layer approximations. Similarity and integral methods of solution. Internal flows, flow over surfaces, jets, rotating elements, and the effects of compressibility.

Requisite: ENGI 305

MEEN 622
Compressible Flow
Three Credits
This course describes the fundamental concepts and results for the compressible flow of gases. Topics to be covered include: appropriate conservation laws; propagation of disturbances; isentropic flows; normal shock wave relations, oblique shock waves, weak and strong shocks, and shock wave structure; compressible flows in ducts with area changes, friction, or heat addition; heat transfer to high speed flows; unsteady compressible flows, Riemann invariants, and piston and shock tube problems; steady 2D supersonic flow, Prandtl-Meyer function; and self-similar compressible flows.

Requisite: MEEN 603

MEEN 623
Multiscale Turbulence: Aeronautics
Three Credits
Derivations of conservation laws for velocity field, temperature for turbulent flow from the perspective of multiscale applications including wind energy, the atmospheric turbulent boundary layer & aerodynamics (re-entry, transonic flow, turbines). Asymptotic method & similarity transformations for high Reynolds number will be a major focus of the applications. The course will also deal with incompressible & compressible flow.
Requisite: MEEN 603

MEEN 624
Combustion
Three Credits
The present course covers the fundamentals of combustion, flame structure, flame speed, flammability, ignition, stirred reaction, kinetics and nonequilibrium processes, and pollutant formation. Also it is presented some applications to engines, energy production and fire safety.

Requisite: MEEN 421

MEEN 628
Advanced Topics in Aerospace
Three Credits
Study of advanced topics in aerospace.

Requisite: Permission of the department head

MEEN 629
Independent Study in Aerospace
Three Credits
Individual study of specific topics in aerospace of academic and research interest.

Requisite: Permission of the department head

MEEN 641
Sustainable Energy: Solar, Nuclear, Wind Energy Fuel Cell & Geothermal
Three Credits
The present course study the current and potential future energy systems, and it includes topics on resources, extraction, conversion, and end-use, with emphasis on meeting regional and global energy needs in the 21st century in a sustainable manner. Different renewable and conventional energy technologies will be presented and their attributes described within a framework that aids in evaluation and analysis of energy technology systems in the context of political, social, economic, and environmental goals.

Requisite: MEEN 421

MEEN 642
Grid Integration & Sustainable Systems
Three Credits
Students will learn a variety of alternative energy sources, along with energy processing technologies required for power system connection. System integration issues will be addressed, with consideration given to impacts on current design philosophies and operating procedures. Topics will be covered at a level suited to establishing a broad understanding of the various technologies, and of the associated system implications.

Requisite: ELEN 420, MEEN 641

MEEN 643
Energy Management Policy & Ethics
Three Credits
Three hours of lecture/studio per week. The course will deal with efficient use and management of energy in wide range of industrial, commercial and domestic applications. The course will address recent government incentive and policy for renewable energy.

Requisite: MEEN 641

MEEN 644
Photovoltaic Energy Conversion
Three Credits
This course explain how solar cells convert light into electricity, how solar cells are manufactured, how solar cells are evaluated, what technologies are currently on the market, and how to evaluate the risk and potential of existing and emerging solar cell technologies. The present course scrutinizes what limits solar cell performance and cost, and the major hurdles — technological, economic, and political — towards widespread substitution of fossil fuels.

Requisite: Permission of the Instructor

MEEN 645
Wind Energy
Three Credits
Main features of energy conversion by wind turbines. Emphasis on characterization of the atmospheric boundary layer, aerodynamics of horizontal axis wind turbines, and performance prediction. Structural effects, power train considerations, siting, and wind farm planning.

Requisite: MEEN 603

MEEN 646
Solar Refrigeration and Air Conditioning
Three Credits
This course offers fundamental knowledge on Radiant energy transfer and its application to solar exchangers; energy balances for solar exchangers, review of theory, economics, and practice of solar energy applications. Special attention is given to refrigeration and air conditioning systems.

Requisite: MEEN 421

MEEN 648
Advanced Topics in Alternative Energy
Three Credits
Study of advanced topics in alternative energy.

Requisite: Permission of the department head

MEEN 649
Independent Study in Alternative Energy
Three Credits
Individual study of specific topics in alternative energy of academic and research interest.

Requisite: Permission of the department head

MEEN 651
Ocean Energy
Three Credits
Three hours of lecture per week; 45 hours per semester. Learn ocean renewable energy technology principles and applications as well as the design considerations. Model and quantify the ocean energy sources and economic viability.

Requisite: MEEN 601

MEEN 652
MEEN 652 Biofuels
Three Credits
Three hours of lecture per week; 45 hours per semester. Learn principles on the generation, production and use of biofuels. Understand the challenges and merits of using biofuels.

Requisite: MEEN 320, MEEN 601

MEEN 671
Advanced Heat Conduction
Three Credits
Analytical methods in conduction; Bessel functions, separation of variables, Laplace transforms, superposition, oscillating solutions; computer methods; finite differences, finite elements.

Requisite: MEEN 420

MEEN 672
Mechanical Vibrations
Three Credits
Concepts of mechanical vibration, including free and forced vibration of single- and multi-degree of freedom systems. Modal analysis and matrix formulation of vibration problems. Approximate solution techniques. Vibration and modal analysis of continuous systems: beams, rods, and strings. Introduction to the response of linear systems to random excitation. Numerous examples and applications of vibration measurement and analysis.

Requisite: MATH 395

MEEN 673
Computational Fluid Dynamics
Three Credits
The present course study focuses on computational approaches to solve Navier-Stokes equations; which govern fluid flow in most engineering applications. Fundamental issues related with implementation of finite difference methods (FDM), finite volumes (FVM) and finite element methods (FEM) will be discussed. These issues include: the discrete formulation, non-linear equation iterator (steady)/marcher (time-accurate), linear equation formulation, boundary condition prescription and linear equation solution.

Requisite: MEEN 601

MEEN 674
Micro and Nanoscale Heat Transfer
Three Credits
This course explores the methods and observations of thermophysical phenomena in size-affected domains. A study of various modern engineering applications, such as microchannel heat sinks, micro heat exchangers, and micro heat pipes is presented. Additionally the course covers methods that range from discrete computation to optical measurement techniques for microscale applications. The fundamental of nanoscale thermal phenomena in fluids is also studied.

Requisite: MEEN 420

MEEN 675
MEMS and Energy Harvesting
Three Credits
Three hours of lecture per week; 45 hours per semester. Discussion of micromachining and microfabrication techniques (including planar thin-film process technologies, photolithographic techniques, deposition and etching techniques, and other technologies) used for MEMS fabrication. Since MEMS encompasses a multi-domain approach, this course will cover the fundamentals of mechanical, electrical, fluidic, and thermal energy/signal domains for the design and analysis of devices and systems. Basics of sensing and transduction mechanisms will be covered (conversion of non-electronic signals to electronic signals, including capacitive and piezo-resistive techniques). Multiple examples of sensors and actuators and their applications will be reviewed. Energy harvesting applications from MEMS technology will be discussed as well.

Requisite: MEEN 501, MEEN 601

MEEN 676
Design Optimization
Three Credits
Three hours of lecture per week; 45 hours per semester. The course covers two fundamental issues in engineering design: design theory and design practice. The first half semester will be used for learning fundamental design theory, and topics include: fundamentals of engineering design, optimality conditions, linear and nonlinear programming, primal and

dual theory, topology/sizing/shape design. The second half will be allocated for practicing engineering design problems, and topics include: response surface method, robust design using Taguchi method and Genetic Algorithm, introduction of multidisciplinary design optimization, engineering uncertainty in design.

Requisite: ENGI 122, MEEN 601

MEEN 678
Advanced Topics
Three Credits
Study of advanced topics in mechanical engineering.

Requisite: Permission of the department head

MEEN 679
Independent Study
Three Credits
Individual study of specific topics in mechanical engineering of academic and research interest.

Requisite: Permission of the department head

MEEN 681
Introduction to Biomechanics
Three Credits
Three hours of lecture per week; 45 hours per semester. The course provides an overview of the function and structure of the musculoskeletal system. It reviews the kinematic and kinetic concepts to be applied to biological tissues, and the strength of materials concepts for biological materials. Time dependent and independent mechanical behavior will be considered.

Requisite: ENGI 318

MEEN 682
Systems Engineering
Three Credits
Three hours of lecture per week; 45 hours per semester. The course covers the theory and practice of the discipline of systems engineering, the system life cycle and stakeholder involvement, as well as the explanation of the systems design process. It provides the knowledge and skills to engineer multidisciplinary systems.

Requisite: Acceptance into master's program.

MEEN 683
Friction, Wear and Lubrication
Three Credits
Three hours of lecture per week; 45 hours per semester. The objective of the course is to familiarize fundamental wear mechanisms of adhesive, abrasive, corrosive and surface fatigue; boundary and hydrodynamic lubrication; friction theories; surface topography characterization; Applications in journal and ball bearings, clutches and brakes.

Requisite: ENGI 244

MEEN 684
Advanced Tribology
Three Credits
Three hours of lecture per week; 45 hours per semester. The objective of the course is to be in depth study of selected topics in tribology, which includes wear and friction theories, oil film thickness calculations, contact mechanics, materials for tribology, and application in bearing and gear.

Requisite: MEEN 683

MEEN 694
Special Project
Three Credits
Comprehensive study of a mechanical engineering problem.

Requisite: Permission of the project advisor

MEEN 697
MS Thesis
Three Credits
Research in the field of Mechanical Engineering and presentation of a thesis.

Requisite: Permission of the thesis advisor

NSEC 501
Network Security I
Three Credits
Fundamental aspects of network security. Overview of active and passive security attacks. Case studies. Concepts of Confidentiality, Authentication, Integrity, Non-repudiation, Access Control and Availability. Electronic mail, IP and web security. Cryptography. Data Encryption Standard (DES), Public and Private keys, Key Generation, Key Distribution and Management, Digital Signatures.

Requisite: Admission to Network Security Program.

NSEC 502
Computer Security I
Three Credits
Overview of Windows and UNIX operating systems including Microsoft Windows 2003 Server and SUN Solaris. Topics to be covered include the following: concept of domains and domain controllers, trust relationships, users and password administration, the active directory, Access Control Lists (ACLs), security audits, data backup and restoral, file encryption, shared drives and folders, Microsoft Exchange security, Kerberos, Radius servers, Remote Access Service, system event log, Network Monitor and Trusted Solaris.

Requisites: Admission to Network Security Program

NSEC 521
Network Security II
Three Credits
Local and Wide Area networks. Wired and Wireless networking equipment: routers, switches, firewalls access points. Intranets and Extranets. Software and hardware firewalls. Packet filtering. Firewall design principles and configurations. Bastion Hosts and Proxy Servers. U.S. Government TEMPEST. Virtual Private Networks (VPNs) and IP Security (IPSEC). Wired Equivalent Privacy and WTLS for wireless networks.

Requisites: NSEC 501, TCOM 521.

NSEC 522
Computer Security II
Three Credits
Multilevel security and trusted systems. Website vulnerabilities. E-commerce and Secure Sockets Layers (SSL). Intruders and Intrusion detection. Statistical anaomaly detection. Password selection and protection schemes. System Forensics. Legal aspects of Network Security. Computer viruses, bacteria, worms, adware, unwanted programs, trojan horses. Polymorphic, macro and stealth viruses. History of major virus attacks. Analysis of stack vulnerability. Virus detection schemes, templates, virus scanning. Use of the Registry Editor to remove specific viruses such as the backdoor subseven virus.

Requisite: NSEC 502

TCOM 503
Introduction to TCP/IP
Three Credits
Underlying applications, components and protocols of TCP/IP and its necessary link to the Internet. How to identify TCP/IP layers, components and functions. Navigation tools, TCP/IP services and troubleshooting methodologies are also covered in this course.

Co-requisite: TCOM 521

TCOM 507
Convergence of Technologies
Four Credits
The course deals with functional requirements of a converged network and how various technologies make convergence possible by providing each of those functions. Emphasis is placed on the critical need for increased bandwidth by reviewing the standard LAN and WAN protocols used in the most common networking configurations. Several emerging protocols and technologies that promise to provide the quality of service necessary for the transmission of time-sensitive information will be introduced. Practical applications of convergence will also be discussed.

Requisite: TCOM 503

TCOM 508
Implementation of Data Networks
Three Credits
The course focuses on the process of designing and implementing a new network or network upgrade. This complex process has four major phases, each with its own inputs, tasks, and outputs: concept, development, implementation and termination. This process mirrors the engineering phased approach to design disciplines.

Requisite: TCOM 503

TCOM 509
Protocol Analysis
Three Credits
This is an advanced course for networking professionals and students who already grasp the general concepts of data communications and networking, but would like a more detailed understanding of the processes and protocols used in today's networks. Network architectures will be discussed from an OSI model perspective of the networking protocol stack, and a detailed analysis of the protocol will ensue using traces taken with protocol analyzers.

Requisite: TCOM 503

TCOM 511
Internet Technologies
Three Credits
The course is an overview of the Internet, its history, organization and structure. Different ways to access the Internet, both as an individual user and as a group of users will be discussed. Areas such as copyrights issues, bandwidth considerations, portal development, practical research using the internet, FTP and electronic mail, XHTML, web servers, graphics, scripts, tables, audio, video and security are covered.

Requisite: TCOM 503

TCOM 512
Internetworking Devices
Three Credits
This is an advanced course for networking professionals and other participants who grasp the general concepts of data communications and networking, but would like a more detailed understanding of internetworking and internetworking devices. The course focuses on issues encountered with network growth and the internetworking components that offer solutions to these problems. The

components covered in this class include repeaters, hubs, bridges, switches, routers and gateways. Network Management and the Simple Network Management Protocol (SNMP) are also discussed.

Requisite: TCOM 503

TCOM 513
IT Project Management
Three Credits

Information Technology (IT) Projects are major organizational investments. In today's Global Economy the level of success of these projects is paramount to Enterprise Sustainability and continued business. This class will concentrate on providing not only the basic PM skills but will concentrate on the particular techniques designed for technology based projects, ITPM. It will discuss and explain PMBOK techniques (Project Management Body of Knowledge), the ITPM cycle, tools and processes, scope definition, verification and control. ITPM estimation techniques, risk management, analysis, assessment, monitor and control methods will be covered also. Implementation, closure and evaluation techniques specifics for ITPM projects will also be presented and discussed.

TCOM 514
Telecommunications Governance I
Three Credits

IT governance is an integral part of the business and an integral part of corporate governance. IT governance consist of the leadership, organizational structures an processes that ensure that the organization's IT sustains and extends the organization strategies and objectives. The key goal of technology governance is enterprise sustainability. This series of two courses will cover the framework elements, areas of focus, risk management, strategic alignment, performance measures, IT value delivery and resource management in the design of an effective IT governance plan and strategy. This first course will focus on the basics of IT governance including the legal framework, global standards and considerations, governance archetypes and will study practical cases in various organization types.

Requisite: TCOM 513

TCOM 515
Telecommunications Governance II
Three Credits

IT governance is an integral part of the business and an integral part of corporate governance. It governance consist of the leadership, organizational structures an processes that ensure that the organization's IT sustains and extends the organization strategies and objectives. The key goal of technology governance is enterprise sustainability. This series of two courses will cover the framework elements, areas of focus, risk management, strategic alignment, performance measurements, IT value delivery and resource management in the design of an effective IT governance plan and strategy. This second course will focus on the mechanisms for implementing IT governance, linking strategies and performance, leadership principles, business intelligence, real time business intelligence, changing landscape of the telecommunications industry. Multiple cases will be presented and the students will create a BI based strategy and roadmap.

Requisite: TCOM 514

TCOM 516
Telecommunications Management & Policy
Three Credits

This course presents and discuss the most relevant aspects of the telecommunications sector from policy, business and technology perspectives. It presents and studies the driving forces behind the changes in the telecommunications policy and the significant impact of legal and regulatory changes on business operation. It focuses on the globalized enterprise challenges, opportunities and threats. Such key issues as global economy and its impact on information and communications technologies (ICT´s), enterprise strategy and telecommunications, standards, ISO´s and good practices, challenges and risk involved in information and telecommunications management are thoroughly covered. The role of ICT´s in innovation, value creation and global strategic positioning are also presented through actual cases.

Requisite: TCOM 514

TCOM 521
Introduction to Networking
Four Credits

This course introduces participants to the key concepts of data communications, telecommunications and networking. It provides an introduction to networking fundamentals including key acronyms, protocols, and components that are essential to understanding how networks operate. Students will gain a high-level understanding of the OSI model, networking protocols, networking components, local area networks and wide area networks. Upon completion, the participant will have a basic understanding of how information travels from a source computer to a destination computer across a complex network.

Requisites: Admission to Network Security Program.

TCOM 556
IP Telephony & Design and Implementation of Voice Networks
Four Credits

The course presents and explains the many and varied techniques, solutions, principles, and challenges both

carriers and end users utilize, experience, and overcome in implementing voice-over IP services. This course explores the various protocols involved, the QoS challenges we face and their solutions, engineering principles to consider when designing a VoIP solution, market drivers and applications, security issues, and carrier options. The course deals with structure and design of telecommunication networks, both large and small. Topics include an overview of the public telephone network, and a description of the large networks and transmission facilities that switch telephone calls. PBX switching systems and an introduction to the science of traffic engineering will also be presented. The three most common methods of estimating the optimum trunk capacity of a phone system will be discussed, as well as practical advice for gathering the raw data necessary for traffic engineering calculations.

Requisite: TCOM 503

TCOM 606
Network Design Project
Six Credits

Development, analysis, simulation and implementation of a significant design project related to the area of Computer Networks. Discussion of design constraints and manufacturing cost, compatibility with the environment, aesthetics, safety, possible social, political, or ethical implications. Development of a prototype including discussion of the design cycle and experimental verification or simulations. A detailed written report and final presentation are required.

Requisite: Advisor approval. Approve all required courses as established by the Institution with a minimum of 3.00 per course and a minimum of 3.00 GPA.

TCOM 607
Thesis Advisory
Three Credits

The purpose of this course is to establish the relationship and working environment between the student and thesis advisor. The student must select a subject matter and obtain advisor's approval. The thesis advisor will provide feedback and guide the student through the process of writing his thesis including guiding the student through the investigation proposal and process and is course studies the principles and methods and techniques of scientific investigation and proper academic redaction. At the end of the course the student will have the written thesis proposal. Of not finishing it he will be to register the course again to culminate properly his proposal. For more details on the matter the student will have to be read to the Graduate Catalog and Academic Norms.

Requisites: To have completed a minimum of 27 credits of the program as established by the Institution with a minimum of 3.00 per course and a minimum of 3.00 GPA.

SCHOOL OF HEALTH SCIENCES

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.

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.

Nursing Programs: Graduate and Undergraduate
Accredited by the Commission on Collegiate Nursing Education (CCNE) from the American Association of Colleges of Nursing. One Dupont Circle, NW Suite 530 Washington, DC 20036.

Nutrition and Dietetics
Probationary Accreditation 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.

Naturopathic Medicine
Candidate by the Council on Naturopathic Medical Education (CNME). PO Box 178, Great Barrington, MA 01230.

STAFF

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Arysdelis Figueroa / Clinical Coordinator, Naturopathic Medicine Doctoral Program

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Nydia Bou / Dean

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Yariann Martínez / Student Services Officer

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ND, National College of Naturopathic Medicine

Piyali Bhattacharya / Assistant Professor
PhD, Jadavpur University of Calcutta, India

MASTER'S DEGREES

Science in Nursing with a Family Nurse Practitioner Specialty
Graduate Professional Certificate with a Family Nurse Practitioner Specialty

Description

Master of Science Degree in Nursing with a Family Nurse Practitioner Specialty and Graduate Professional Certificate with a Family Nurse Practitioner Specialty.

Students are taught through a holistic perspective with a multidisciplinary and collaborative focus throughout the life span of the patient. Students are exposed to educational activities that will prepare them to increase health promotion, preventive health, and provide primary care services. Students will contribute to decrease morbidity and mortality in medically underserved, low-income populations, both globally and in Puerto Rico.

OBJECTIVES

1. Utilize national primary care guidelines and standards to promote high quality health care services.
2. Participate in the generation, application, and dissemination of research.
3. Participate in planning, development, and implementation of community health programs.
4. Utilize research to enhance the quality of health care.
5. Provide health promotion and disease prevention.
6. Maintain collaborative relationships with other health care professions.
7. Participate in continuing education through different methodologies, including online courses.
8. Maintain proficiency in computer skills and information technologies.
9. Participate in legislative and policy-making activities which influence health care.
10. Develop grant/proposal writing skills.

GENERAL REQUIREMENTS OF ADMISSION TO THE GRADUATE PROGRAM

1. Bachelor of Sciences in Nursing from an accredited School of Nursing with a minimum 3.0 GPA.
2. Basic statistic course at baccalaureate level (3 credits).
3. Updated Professional nursing license and registration at Colegio de Profesionales de la Enfermería de Puerto Rico (CPEPR).
4. Results of the Graduate Record Exam (GRE) or the Spanish Test of Aptitude for Graduate Studies (EXADEP).
5. A minimum average of 75% as a result of the sum of the following criteria:

General point average	25%
Specific point average	25%
EXADEP or GRE	10%
Personal Interview	30%
Analysis of Article	5%
Curriculum Vitae or Resume	5%
TOTAL	100%

6. Analysis of an article.
7. CV or resume.
8. Personal interview.

Curriculum for the Master's Degree in Nursing with Specialty in Family Nurse Practitioner

Total Credits	**51 credits**
Core Courses	**17**
Advanced Practice Core Courses	**15**
Specialty Courses	**16**
Elective Courses	**3**

Core Courses		**(17 credits)**
NURS 500	Theoretical Foundations of Advanced Practice Nursing	3
NURS 501	Public Health Policies, Ethics and Systems	3
NURS 502	Nursing Science & the Research Process	3
NURS 503	Nursing Research Project: From Proposal to Publication	3
NURS 505	Health Promotion and Disease Prevention: Transcultural Considerations	2
HESC 500	Statistics Applied to Clinical Research	3

Advanced Practice Core Courses		**(15 credits)**
NURS 504	Advanced History-Taking and Physical Assessment	3
NURS 506	Advanced Pathophysiology	3
NURS 507	Advanced Pharmacology	3
NURS 508	Diagnostics & Differential Diagnosis	3
NURS 509	Pharmacology for FNPs	3

Specialty Courses		**(16 credits)**
NURS 510	Primary Care I	4
NURS 511	Primary Care II	4
NURS 512	Primary Care III	4
NURS 513	Residency	4

Elective Course		**(3 credits)**
(select from this group)		
CRJU 600	The Victim: Crime, Practices and Society	3
CRJU 640	Addiction Problems: Legal and Psychosocial Aspects	3
HURM 732	Occupational Health and Safety	3
MANA 501	Organizational Behavior	3
MANA 505	Informatics Systems	3
MANA 715	Supervision and Leadership	3

Curriculum for the professional FNP Certificate:

Total Credits	**31**
Advanced Practice Courses	**15**
Specialty Courses	**16**

Advanced Practice Nursing Core Courses		**(15 credits)**
NURS 504	Advanced History-Taking and Physical Assessment	3
NURS 506	Advanced Pathophysiology	3
NURS 507	Advanced Pharmacology	3
NURS 508	Diagnostics & Differential Diagnosis	3
NURS 509	Pharmacology for FNPs	3

Specialty Courses		**(16 credits)**
NURS 510	Primary Care I	4
NURS 511	Primary Care II	4
NURS 512	Primary Care III	4
NURS 513	Residency	4

Science in Speech-Language Pathology

The Master's degree in Science in Speech-Language Pathology Program follows the highest standards of quality and professional ethics for the professional preparation of future SLP's. The curriculum prepares the student for prevention, evaluation, differential diagnosis and treatment activities. The curriculum prepares the student to take care of infants, children, adolescents and adults with communication, feeding and swallowing disorders.

Total Credits	**64 credits**
Professional Courses	**46**
Supervised Clinical Practicum	**6**
Specialty Project	**9**
Elective Courses	**3**

Professional Courses		**(46 credits)**
MSLP 500	Phonology	3
MSLP 510	Language Disorders in Children	3
MSLP 520	Audiology for the Speech-Language Pathologists	3
MSLP 535	Neuroscience Applied to SLP	3
MSLP 530	Fluency Disorders	3
MSLP 540	Voice Disorders	3
MSLP 630	Language Disorders in Adults	3
MSLP 525	Seminar: Multicultural Issues in SLP	2
MSLP 545	Seminar: Contemporary Professional Issues in SLP & Audiology	2
MSLP 570	Augmentative and Alternative Communication	3
MSLP 550	Clinical Assessment Skills	3
MSLP 590	Neurogenic Speech and Language Disorders	3
MSLP 580	Aural Rehabilitation	3
MSLP 620	Oral Motor and Swallowing Disorders	3
MSLP 555	Clinical Intervention Skills	3
MSLP 680	Knowledge Integration in SLP	3

Research Courses		**(6 credits)**
MSLP 559	Research in SLP I	2
MSLP 569	Research in SLP II	2
MSLP 669	Research in SLP III	2

Clinical Courses		**(9 credits)**
MSLP 595	SLP Clinical Practicum Workshop	3
MSLP 600	Clinical Internship I	3
MSLP 610	Clinical Internship II	3

Electives		**(3 credits)**
(Select one)		
MSLP 505	Early Intervention	3
MSLP 515	Seminar: Administration of School Based SLP Programs	3
MSLP 517	Deaf Culture & Sign Language Foundations	3
MSLP 560	Acoustics	3
MSLP 565	Language, Reading and Writing	3
MSLP 575	Emergent Literacy	3
MSLP 585	Supervisory Process	3
MSLP 615	Craniofacial Disorders	3
MSLP 625	Related Conditions to Speech- Language & Hearing Disorders	3
MSLP 635	Qualitative Research for SLP	3
MSLP 640	Counseling Strategies for SLP	3
MSLP 645	Computers in SLP	3
MSLP 650	Traumatic Brain Injury	3
MSLP 675	Auditory Disorders	3

Notes:

1. All MSLP Courses must be approved with A or B grades
2. Effective August 2010
3. Students need to complete a minimum of 400 clinical practicum hours. A minimum of 375 hours must be accrued while the student is engaging in direct client-patient contact. Up to a maximum of 25 clinical observation hours will be counted toward the grand total.
4. Students need to approve the PRAXIS examination in Speech-Language Pathology with 600 points. If a passing score of 600 in the PRAXIS examination is not achieved, the student must take and approve the MSLP Program Comprehensive Examination. The passing score of the MSLP Program Comprehensive Examination is 70 points. The test is given as part of the requisites of the MSLP 680 Knowledge Integration in Speech-Language Pathology course.
5. Students need to complete a research project under the guidance of a faculty mentor. The project requirements include all chapters bind and ready for submission to UT library, a poster presentation, a publishable article, and a CD including everything handed in paper.
6. Students need to complete the Knowledge and Skills Acquisition (KASA) Summary Form for Certification in Speech-Language Pathology. Students must complete the form and obtain the Clinical Coordinator, Academic Advisor, and Program Director signatures.

DOCTORAL DEGREES

Doctorate in Naturopathic Medicine Program

Description

The Doctorate in Naturopathic Medicine is a four-year program to train holistic primary care physicians and prepare them to sit for examination in states and provinces that license N.D.'s (naturopathic physicians).

The curriculum includes holistic and non-toxic approaches to healing with a strong emphasis on disease prevention and optimizing wellness. This four year program requires hands-on clinical experience with the different modalities and bio-medical sciences.

Mission

To prepare excellent naturopathic physicians in the tradition of medical science and art of natural healing who can respond to the needs of local and global communities.

Vision

An innovative educational setting for doctors in naturopathic medicine with balanced efforts among academic offerings, clinical services, and research endeavors.

ND Goals and Objectives

1. Provide comprehensive education in naturopathic medicine by integration of knowledge in the Basic Sciences and Clinical Services.
    - 1.1 Acquire a broad and in-depth knowledge of health promotion, risk reduction and disease prevention.
    - 1.2 Acquire an in-depth study of the human body.
    - 1.3 Integrate didactic and clinical experiences on illness and disease management.
    - 1.4 Develop excellent clinical skills to diagnose the causes of disease.
    - 1.5 Develop excellent clinical skills to treat patients who have diseases effectively, using naturopathic therapeutics.

2. Empower graduates as primary-care physicians who demonstrate:
    - 2.1 Well developed sense of personal wellness.
    - 2.2 Knowledge of their unique skills as healers.
    - 2.3 Knowledge of the scope of the practice and its limitations.
    - 2.4 Responsibility in finance and business.
    - 2.5 Clinical competence and confidence.
    - 2.6 Clinical research and evidence-based practice skills.

3. Foster a high degree of professionalism as a key member of the interdisciplinary health care team.
   - 3.1 Become a provider of excellence and consistent patient care.
   - 3.2 Demonstrate the ability to carry out a systematic approach to naturopathic medical diagnosis and treatment.
   - 3.3 Practice the principles of Naturopathic Medicine as adopted by the American Association of Naturopathic Physicians.
   - 3.4 Advocate for professional standards and political processes.
   - 3.5 Recognize the importance of professional ethics.
   - 3.6 Apply knowledge in global health care systems and policies.
   - 3.7 Respect cultural differences and an appreciation of human diversity.
4. Produce graduates committed to continuous improvement with the ability to:
   - 4.1 Apply practical knowledge in their practice setting.
   - 4.2 Continuously develop skills throughout their career as naturopathic physicians.

GENERAL REQUIREMENTS OF ADMISSION

The Admission Requirements for the Naturopathic Medicine Doctoral Program are consistent with requesting the following documents:

- Bachelor of Sciences from an accredited Institution with a minimum 3.00 GPA.
- Admission application
- Official credit transcript
- Copy of updated resume or other record of professional experience and achievements
- Three letters of recommendation
- A personal essay discussing professional and educational goals
- Results of the Graduate Record Exam (GRE) or the Spanish Test of Aptitude for Graduate Studies (EXADEP).
- A non-refundable admission fee of $75.00.
- Evidence of the following pre-requisite course work (science courses taken over 10 years prior to time of application are subject to review):
  - ✓ 12 semester credits in Biology with Laboratory (including Anatomy and Physiology)
  - ✓ 8 semester credits in Chemistry with Laboratory
  - ✓ 4 semester credits in Organic Chemistry
  - ✓ 3 semester credits in Physics
  - ✓ 6 semester credits in Psychology
  - ✓ 6 semester credits in English
  - ✓ 6 semester credits in Humanities
  - ✓ 3 semester credits in Spanish
  - ✓ 1 semester course in Algebra or Pre-Calculus

Curriculum

Total Credits	**278**
Clinical Science Education courses	**58**
Basic Science Courses	**49**
Naturopathic Clinical Practice Courses	**51**
Naturopathic Clinical Science Courses	**34**
Oriental Medicine Courses	**21**
Physical Medicine Courses	**12**
Clinical Nutrition Courses	**12**
Botanical Medicine Courses	**11**
Homeopathic Education Courses	**8**
Health Sciences Courses	**7**
Naturopathic Medicine Philosophy and Practice Courses	**6**
Mind and Body Medicine Philosophy and Practice Courses	**6**

Clinical Science Education Courses		**(58 credits)**
CLSE 701	Human Pathology I	3
CLSE 703	Clinical and Physical Diagnosis I with Laboratory	6
CLSE 705	Laboratory Diagnosis I with Laboratory	3
CLSE 707	Pharmacology I	3
CLSE 709	Human Pathology II	3
CLSE 711	Clinical and Physical Diagnosis II with Laboratory	6
CLSE 713	Laboratory Diagnosis II with Laboratory	3
CLSE 715	Pharmacology II	3
CLSE 717	Human Pathology III	3
CLSE 719	Clinical and Physical Diagnosis III with Laboratory	6
CLSE 721	Laboratory Diagnosis III with Laboratory	3
CLSE 723	Human Pathology IV	3
CLSE 725	Environmental Medicine and Toxicology	2
CLSE 727	Diagnostic Imaging I	2
CLSE 729	Diagnostic Imaging II	2
CLSE 731	Diagnostic Imaging III	2
CLSE 733	Minor Surgery with Laboratory	3
CLSE 735	Medical Genetics	2

Basic Science Courses		**(49 credits)**
BASC 700	Human Gross & Developmental Anatomy	10
BASC 702	Medical Physiology & Organ Systems I	6
BASC 704	Biochemistry & Cellular Systems I	3
BASC 706	Medical Histology	4
BASC 708	Medical Physiology and Organ Systems II	6
BASC 710	Biochemistry & Cellular Systems II	3
BASC 711	Neuroanatomy	4
BASC 712	Medical Physiology and Organ Systems III	7
BASC 714	Biochemistry and Cellular Systems III	3
BASC 716	Microbiology and Public Health	3

Naturopathic Clinical Practice Courses (51 credits)

NPCL 765	Diagnostic Imaging Practicum	2
NPCL 770	Field Observation I	2
NPCL 775	Clinical and Physical Diagnosis Rotation I	2
NPCL 780	Field Observation II	2
NPCL 785	Clinical and Physical Diagnosis Rotation II	2
NPCL 790	Field Observation III	2
NPCL 795	Laboratory Results Practicum	1
NPCL 800	Clinical Secondary Shifts I	2
NPCL 802	Clinical Secondary Shifts II	2
NPCL 804	Clinical Secondary Shifts III	2
NPCL 806	Clinical Secondary Shifts IV	2
NPCL 808	Clinical Secondary Shifts V	2
NPCL 810	Clinical Secondary Shifts VI	2
NPCL 812	Clinical Primary Shift I	2
NPCL 814	Clinical Primary Shift II	2
NPCL 816	Clinical Primary Shift III	2
NPCL 818	Clinical Primary Shift IV	2
NPCL 820	Clinical Primary Shift V	2
NPCL 822	Clinical Primary Shift VI	2
NPCL 824	Clinical Primary Shift VII	2
NPCL 826	Clinical Primary Shift VIII	2
NPCL 828	Clinical Primary Shift IX	2
NPCL 830	Clinical Primary Shift X	2
NPCL 832	Clinical Primary Shift XI	2
NPCL 834	Clinical Primary Shift XII	2
NPCL 838	Knowledge Integration	2

Naturopathic Clinical Science Courses (34 credits)

NPCS 701	Gynecology	2
NPCS 702	Obstetrics	2
NPCS 703	Cardiology	2
NPCS 705	Pediatrics	2
NPCS 707	Eyes, Ear, Nose and Throat	2
NPCS 709	Rheumatology and Pain	2
NPCS 711	Emergency Medicine	2
NPCS 713	Oncology	2
NPCS 715	Dermatology	2
NPCS 717	Endocrinology	2
NPCS 719	Geriatrics and Aging	2
NPCS 721	Gastroenterology and Proctology	2
NPCS 723	Urology	2
NPCS 725	Pneumology	2
NPCS 727	Neurology	2
NPCS 729	Mental Health and Psychiatry	2
NPCS 731	Intravenous Therapies with Laboratory	2

Oriental Medicine Courses (21 credits)

ORME 700	Fundamentals and Theory of Chinese and Oriental Medicine	3
ORME 702	Traditional Chinese Medicine Diagnosis	2
ORME 704	Meridians and Points I with Laboratory	3
ORME 706	Meridians and Points II with Laboratory	3
ORME 708	Traditional Chinese Medicine Pathology	2
ORME 710	Acupuncture Techniques with Laboratory	3
ORME 712	Chinese Botanical Medicine	2
ORME 714	Fundamentals of Ayurvedic Medicine	3

Physical Medicine Courses (12 credits)

PHMD 700	Principles of Hydrotherapy	1
PHMD 702	Introduction to Physical Medicine and Orthopedics	2
PHMD 704	Physiotherapy Modalities with Laboratory	2
PHMD 706	Naturopathic Manipulative Therapy I	2
PHMD 708	Naturopathic Manipulative Therapy II	2
PHMD 710	Sports Medicine & Orthopedics	3

Clinical Nutrition Courses (12 credits)

NUTR 700	Clinical Nutrition I	3
NUTR 702	Clinical Nutrition II	3
NUTR 704	Clinical Nutrition III	3
NUTR 706	Clinical Nutrition IV	3

Botanical Medicine Courses (11 credits)

BOTM 701	Botanical Medicine I	3
BOTM 703	Botanical Medicine II	3
BOTM 705	Botanical Medicine III	3
BOTM 707	Botanical Medicine IV	2

Homeopathic Education Courses (8 credits)

HOME 700	Homeopathy I	2
HOME 702	Homeopathy II	2
HOME 704	Homeopathy III	2
HOME 706	Homeopathy IV	2

Health Sciences Courses (7 credits)

HESC 700	Clinical Research Methods	2
HESC 702	Health Promotion and Disease Prevention: Transcultural Considerations	2
HESC 704	Evidence-Based Practice Project	3

Naturopathic Medicine Philosophy and Practice Courses (6 credits)

NPMP 701	History of Medicine	2
NPMP 703	Naturopathic Medicine Principles and Philosophy	1
NPMP 705	Business Practice	2
NPMP 707	Medical Jurisprudence and Naturopathic Ethics	1

Mind and Body Medicine Philosophy and Practice Courses (6 credits)

MBME 701	Fundamentals of Mind and Body Medicine I	2
MBME 703	Fundamentals of Mind and Body Medicine II	2
MBME 705	Fundamentals of Mind and Body Medicine III	2

Electives (3 credits)

COURSE DESCRIPTIONS

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

HESC 500
Statistics Applied to Clinical Research
Three Credits
The student has the opportunity to study and apply statistical methods useful in quantitative and qualitative analysis of clinical research. The course includes a review of descriptive and inferential statistics with simple invariable procedures. Statistical analyses of multivariable and complex hypotheses testing procedures are also discussed. The material is presented to facilitate students' application of the concepts learned in research courses and is focused on research utilization.

Concurrent with NURS 502.

MSLP 500
Phonology
Three Credits
The course centers on the study and analysis of phonology. Topics include phonological analysis, distinctive features assessment, and manner, place, and voice analysis among other key elements for speech sample analysis. Linguistic treatment approaches as well as traditional approaches will be discussed. Issues related to students reading and writing performance will be presented and analyzed including phonological awareness theories and principles. Multidimensional analysis and interpretation of speech samples will be stressed as well as therapy stimulus selection.

MSLP 505
Early intervention
Three Credits
Assessment and intervention strategies for children birth to three with or at risk for specific language impairment are studied. The family-centered services model is studied and described. The early intervention team roles and responsibilities are discussed as well as current law mandates for early intervention.

MSLP 510
Language Disorders in Children
Three Credits
This course discusses the nature of language disorders in children from a developmental perspective to achieve a functional definition of what constitutes language disorders. Related conditions such as Autism, mental retardation, attention deficit disorder and sensory impairments are discussed as they relate to language disorders in children. Assessment procedures are studied including formal and norm reference tests.

MSLP 515
Seminar: Administration of School-Based SLP Programs
Three Credits
This course will provide the students with the knowledge and skills necessary to plan, initiate and maintain a collaborative program that enhances the student's communication skills in all educational related tiers. Legal, ethical and clinical components for functioning successfully in Puerto Rico and United States educational system will be discussed.

MSLP 517
Deaf Culture & Sign Language Foundations
Three Credits
The course is designed for the health science student who does not have previous Sign Language experience or knowledge of Deaf culture. The purpose of the course is to develop primarily receptive skills as well as expressive skills guided to the development of basic dialogue instructed in a functional scenario. Students will also learn about the Deaf community and their culture. Legal aspects and related services will be discussed.

MSLP 520
Audiology for the Speech- Language Pathologists
Three Credits
Study of the standard and special audiometric procedures including the interpretation of audiograms, use of hearing aids, and diagnostic clinical audiometry. This course is directed toward audiologic issues as they relate to the practice of Speech-Language Pathology.

MSLP 525
Seminar: Multicultural Issues in Speech- Language Pathology
Two Credits
Study of bilingualism, second language acquisition, and its relation to normal language development. Study of minority groups difficulties in the access to appropriate clinical and health services in Puerto Rico and abroad, including the legal aspects involved.

MSLP 530
Fluency Disorders
Three Credits
This course presents the theory, diagnosis and treatment of fluency disorders in children, adolescents, and adults. We will study the symptomatology of stuttering, survey theories of stuttering, and examine normal versus abnormal fluency development. It will focus on diagnosis of fluency disorders and differential diagnosis of stuttering and related disorders

of fluency. A central focus will be placed on the design and application of appropriate treatment programs for young children, school-aged children and adults.

MSLP 535
Neuroscience Applied to SLP
Three Credits
Study of the nervous system across the lifespan in terms of the organization of the brain, descending motor and ascending sensory pathways, cranial nerves and muscles. The neural mechanisms of language, learning and memory are described. Diagnostic techniques in the field of neurology are presented. The effects of specific localized disease processes and brain injury on human speech and communication such as aphasia, alexia, agnosia, apraxia, dysarthria and dysphonia are discussed. Strategies for patient and family education are presented.

MSLP 540
Voice Disorders
Three Credits
Study of the speech mechanism as it relates to voice production. Analysis of voice and voice problems in children and adults, such as phonotrauma, psychogenic voice problems, neurogenic disorders, laryngeal cancer, and problems of professional voice are addressed. Diagnostic procedures and clinical intervention, prevention and remediation of voice disorders are studied.

MSLP 545
Seminar: Contemporary Professional Issues in Speech-Language Pathology & Audiology
Two Credits
Study of the issues related to the profession of speech-language pathology, service delivery, ethics, and legal considerations, funding issues, program administration, credentialing and professional issues. Content is in accordance with the American Speech-Language-Hearing Association Scope of Practice, Code of Ethics, Preferred Practice Patterns and guidelines for credentialing. The course also includes topics like certification standards, professional legislation, licensure, and liability. We will present information and resources that can be used for a professional lifetime. Professional activity, including advocacy for the profession and the clients/patients one serves, will be encouraged.

MSLP 550
Clinical Assessment Skills
Three Credits
During this course the students will study the aspects related to Speech Language Assessment clinical skills. Principles of observation, interviewing, effective interpersonal communication, self-evaluations, and theories in Language Assessment will be study and analyzed. The students will be able to select and administer Speech and Language Test and criterion tasks in Speech and Language. The students will describe the assessment report format and the writing process. Clinically related academic activities and practical experiences with children and adults will be provided. Assessment principles in each area will be studied according to the guiding principles and the fundamental components of preferred practice patterns of the American Speech-Language and Hearing Association.

Requisite: MSLP 500, MSLP 510, MSLP 520, MSLP 530, MSLP 540, MSLP 630

MSLP 555
Clinical Intervention Skills
Three Credits
Study and analysis of the contemporary issues and techniques of treatment, observation, counseling, team-work in speech-language pathology. Current legal issues and aspects in the practice of intervention in speech-language pathology are discussed. Introduction to interdisciplinary treatment techniques are studied and exercised. Basic principles of speech language intervention and information reporting systems are analyzed and discussed. Therapy strategies are described. Methods for effective parent and family counseling are modeled.

Requisite: MSLP 550

MSLP 559
Research in Speech-Language Pathology I
Two Credits
This is the first course offered as part of the research track of the MSLP Program. Students will be introduced to all aspects and steps necessary to conduct responsible research. The course will take students from identifying a research problem and formulating research questions all the way through sampling methods, reviewing literature, and selecting the research design. Students will work with their research mentors in the development of their research proposal chapters I and II.

MSLP 560
Acoustics
Three Credits
A study of clinical research with special attention to the relationship between research outcomes and clinical practice. This course enable students to critically appraise research literature. Students learn how to critique a research study, formulation of research questions and research strategies, measurement, and ethics. Qualitative, observational, descriptive, single-subject, and case studies methodologies reviewed. It is the purpose to prepare the student as a future consumer of research output and to

teach the basics for conducting and participating in research. Topics dealt with are: research topics and research questions, non-experimental designs, experimental designs, reporting research results, evaluating research, and research ethical aspects.

Requisite: MSLP 520

MSLP 565
Language, Reading and Writing
Three Credits
Study of language development and its influence on the acquisition of literacy skills. Examines contextual influences on language and literacy development and growth, reading and writing as integrated processes, and models appropriate practices to foster language and literacy.

Requisites: MSLP 500, MSLP 510

MSLP 569
Research in Speech-Language Pathology II
Two Credits
This is the second course offered as part of the research track of the MSLP Program. In this course students will work with their mentors finishing the literature review and in the development of the methodology of their proposal. Human subjects in research, compliance, and SUAGM Institutional Review Board (IRB) requirements will be discussed.

Requisite: MSLP 559

MSLP 570
Augmentative and Alternative Communication
Three Credits
This course aims to develop an understanding of the strategies available to compensate the functional communication needs of children and adults with moderate and severe speech-language impairments. Basic principles of assistive technology (AT) and augmentative alternative communication (AAC) will be introduced, in particular the components of an AAC system and symbolization skills and levels. The principles of evidence-based practice are the focus of both the assessment process as well as the intervention phase.

Requisites: MSLP 510, MSLP 520

MSLP 575
Emergent Literacy
Three Credits
This course focuses on the research based principles and practices for early literacy development of children aged birth to eight. Current law mandates related to the services of helping professionals such as Speech Language Pathologists on preventing reading and writing disabilities are described and analyzed. The use of appropriate materials and activities to promote early literacy skills on preschool children in collaboration with teachers and family are studied.

Requisites: MSLP 500, MSLP 510

MSLP 580
Aural Rehabilitation
Three Credits
Discussion of the effects of a hearing impairment on speech and language development. The theoretical and methodological aspects of remediation are studied. Visual and manual communication, auditory training, and assistive listening devices are discussed and studied.

Requisite: MSLP 520

MSLP 585
Supervisory Process
Three Credits
This course presents conceptual and empirical literature on supervision including models, approaches, techniques, relationship, and process issues as well as ethical and legal considerations. The course provides the student with knowledge and skills for successful supervision. Comprehensive models of clinical supervision, self-assessment and developmental assessment of supervisees are included as well as intervention techniques in the supervisory relationship. Guidelines for developing a supervision contract are also reviewed.

MSLP 590
Neurogenic Speech and Language Disorders
Three Credits
Study of neurologically-based disorders of speech and language in children. Differential diagnosis and treatment of speech-language disorders in children with cerebral palsy, dysarthria, apraxia of speech, and all other acquired neurogenic disorders are studied and analyzed.

Requisites: MSLP 500, MSLP 510, MSLP 535

MSLP 595
SLP Clinical Practicum Workshop
Three Credits
An initial graduate clinical practicum experience supervised by Universidad del Turabo in-house supervisors and carefully selected external supervisors. The experience emphasizes planning and conducting an emergent literacy program, preparing and selecting therapy materials, taking case histories, conferring with parents, writing therapy notes and plans, and making recommendations. A weekly one hour staffing will be held with students. Intervention management, professional organization, and service delivery issues will be discussed.

Requisites: All MSLP courses (except MSLP 670) plus 25 hours of clinical observation

MSLP 600
Clinical Internship I
Three Credits
Hands-on clinical experience including observation, interviewing, basic assessment, clinical diagnosis, and intervention experiences.

Requisites: MSLP 595

MSLP 610
Clinical Internship II
Three Credits
This course is the continuation of MSLP 600. Students will complete the required 400 supervised clinical practicum hours during this course. Diagnostic and identification techniques along with intervention strategies, therapy techniques, record keeping, and report writing will be stressed.

Requisite: MSLP 600

MSLP 615
Craniofacial Disorders
Three Credits
Study of the anatomical, physiological, and psychosocial aspects of craniofacial disorders. Development, disorders, assessment, and intervention of speech, language, and hearing in patients with craniofacial disorders is analyzed. Basic anatomical information pertinent to craniofacial growth and development is described. Genetic and embryological information is studied. Specific protocol for observing orofacial structures are discussed.

MSLP 620
Oral Motor and Swallowing Disorders
Three Credits
Analysis 012121 of the assessment and management of oromotor swallowing disorders in children and adults with an emphasis on a neurodevelopmental approach. Oral-motor development and swallowing physiological anatomy is described. Etiology and classification of dysphagia is studied. Medical and nonmedical management issues in dysphagia are addressed in children and adults.

Requisites: MSLP 535, MSLP 590

MSLP 625
Related Conditions to Speech- Language and Hearing Disorders
Three Credits)
This course expose students to the range of genetic, developmental, social and psychological conditions associated with speech, language, hearing and communication impairments and their disabling consequences. Methods of speech and language assessment and interventions including the intervention of a multidisciplinary team will be discussed. Alongside, theoretical background and current research, practical and clinical aspects are considered.

MSLP 630
Language Disorders in Adults
Three Credits
Study of the theoretical bases of acquired language disorders in the adult population. Diagnostic tools and treatment approaches based on theories of the nature of aphasia, apraxia, dysarthria and other adult language and cognitive disorders. Current trends in language and cognitive treatment in response to changes in the health care environment. Areas to be covered are acquired communication problems, traumatic brain injury, apraxia of speech, dysarthria and Alzheimer's disease among other language disorders. Adaptation of the environment, particularly home is studied.

MSLP 635
Qualitative Research in Speech- Language Pathology
Three Credits
Study, analysis, and application of the qualitative research paradigm for conducting research in speech-language pathology. Several approaches within the qualitative research paradigm will be discussed. Basic data collection procedures, analysis, and presentation will be studied.

MSLP 640
Counseling Strategies for SLP
Three Credits
Psychosocial and humanistic existential adapted theories such as psychoanalytic theories, cognitive-behavior and experiential approaches are studied to facilitate the development of intervention skills for the speech pathology student. Emphasis is placed on the models of Alfred Adler, Albert Ellis and Carl Rogers. Self-evaluation and understanding of the student's feelings and attitude which develop during the therapeutic process is analyzed. The role of counseling in treating children and adults with communication disorders is discussed and relevant strategies are described. Multicultural considerations in counseling communicative disordered persons and their families are also included. This course is a complement to the technical and professional knowledge of the speech pathology student.

MSLP 645
Computers in SLP
Three Credits
All aspects of technological advancements have become increasingly present in the clinical applications of Speech-Language Pathologists. At present, computer and digital technology in general are tools that impact patient care in a very direct way both in the assessment and intervention processes; and this is a trend that will only increase in the future. Speech-Language Pathologists need to stay current in the skills needed to incorporate the technology that is increasingly available to improve the service delivery to patients.

MSLP 650
Traumatic Brain Injury
Three Credits
Neurophysiological, cognitive, neuropsychological, and social/emotional issues associated with traumatic brain injury are studied. Demographic information describing occurrence patterns and at-risk populations is provided. Primary and secondary mechanisms of injury are described. Stages of recovery are studied and family adjustment issues are discussed. Principles of language and cognitive assessment and intervention are analyzed.

MSLP 669
Research in Speech-Language Pathology III
Two Credits
This is the third course offered as part of the research track of the MSLP Program. The course includes the development phase of a research project. Students will conduct their research along with their research mentors. At the end of the course students will prepare a publishable paper about the research and will conduct a research poster presentation.

Requisite: MSLP 569

MSLP 670
Special Research Project
Three Credits
The course emphasizes the development phase of a clinical speech-language pathology research project focused on evidenced-based practice. Students organize a research proposal using well-organized research paradigm. Ethical conduct of research with human subjects and research staff is discussed. Students demonstrate the implementation of a study that has received institutional approval including the AGMUS IRB. Students prepare, at the end of the course, a paper about the research and submit the paper for publication.

Requisite: MSLP 560

MSLP 675
Auditory Disorders
Three Credits
Auditory disorders through the lifespan will be the focus of this course. The etiology and onset of genetic disorders will be discussed. The development of acquired disorders will also be explained. Audiological results including audiometric configuration and middle ear function test will be presented. The type of hearing loss and the main manifestations of the auditory problem will be described. Clinical intervention strategies as well as the most established methodologies used to treat the conditions in children as well as in adults will be addressed. Implications for the speech-language pathologist and the communicological management of the disorders will also be presented.

Requisite: MSLP 520

MSLP 680
Knowledge Integration in Speech-Language Pathology
Three Credits
Integration, analysis, and application of all Master level Speech-Language Pathology courses (MSLP code courses). The course provides a means to guide students in their preparation for the Speech-Language Pathology local and national board exams.

Requisites: All MSLP courses except MSLP 595, MSLP 600, MSLP 610

NURS 500
Theoretical Foundations of Advanced Practice Nursing
Three Credits
The course focuses on the discussion and analysis of a wide range of theories from nursing and other sciences. Scientific knowledge of care is presented as the central concept and essence of nursing. Emphasis is given to clinical care and research focused on a comprehensive and holistic approach. The practice of nursing is viewed as directly related to the development and revision of nursing theory, where advanced practice nurses can make important contributions.

Concurrent with NURS 505

NURS 501
Public Health Policies, Ethics and Systems
Three Credits
The nature of the U.S. health care delivery system, including Puerto Rico, is explored. The social, economic, cultural and political forces that impact the delivery of primary health care are discussed, with emphasis on how they influence nursing. The course includes discussion and analysis of professional aspects of advanced practice nursing, including how to implement the role. Public policies and legislation are discussed at local, national and global levels. The student examines health care policy development and analyzes the

effects of policy on the health status of Puerto Rican communities. This course provides an opportunity for the student to design innovative strategies that may influence the direction of public policy to improve health care locally and advance the profession of nursing in Puerto Rico. Factors influencing human essential moral status and the ethics of the health care systems will be discussed and analyzed. Different dilemmas are selected and analyzed in order to justify the most appropriate decisions and actions for their solution in an ethical manner.

Requisite: NURS 505, NURS 500

NURS 502
Nursing Science and the Research Process
Three Credits

Discussion of professional nursing practice that is based on evidence to achieve optimal outcomes. Pragmatic considerations of scientific inquiry in the use and conduct of research in practice. The scientific method is presented as it relates to nursing research. Experimental and non-experimental methods of conducting clinical research are examined, with their ethical implications. Emphasis is given to the writing of a research proposal as the plan for a scientific project. Successful grantsmanship is presented as an art that requires sound planning for the project development of a well written proposal, and selection of an appropriate funding source.

Requisite: NURS 500

Concurrent with HESC 500

NURS 503
Nursing Research Project: From Proposal to Publication
Three Credits

The research proposal for this course must have been approved in the previous course (NURS 502). This is the implementation phase of a clinical nursing research project focused on evidenced-based research. This phase is presented as requiring a set of thoughtful, careful, organized and sequential activities to conduct a research project focused on improving the quality of care. Ethical conduct of research with human subjects, animal subjects and research staff is discussed. In this course the student demonstrates the implementation of a study that has received institutional approval and contributes to the advancement of nursing practice. Emphasis is given to preparation of a scientific paper about the research and its submission for publication, as an essential step of the research process. The course aims to contribute to the development of a foundation for practice, to provide visionary leadership, and to achieve personal satisfaction.

Requisites: NURS 502, HESC 500

NURS 504
Advanced History-Taking and Physical Assessment
Three Credits

The course focuses on discussion, performance and interpretation of the theoretical knowledge and development of psychomotor skills for advanced health assessments and techniques with clients of all ages and cultural backgrounds. Students will develop a client database and a differential diagnosis of common client complaints encountered in primary health care practice settings. They will demonstrate the ability to obtain and record a comprehensive adult, elderly, adolescent, and well-client database.

Requisites: NURS 506 or concurrent with approval of first 8 weeks.

NURS 505
Health Promotion and Disease Prevention: Transcultural Considerations
Two Credits

The course centers on discussion of health priorities according to Healthy People 2010. It includes the analysis of human caring as an essential dimension of advanced practice nursing work, especially when dealing with life crises, health maintenance problems, and change in health practices. Demands made by changing life-styles and disease patterns, new and complex technologies, shifting demographics, global economies, dramatic health system changes and sociobiological and environmental threats to health and safety will be discussed. Development of culturally competent holistic plans of care that address the health promotion and disease prevention needs of client populations will be emphasized. Theoretical models are presented as the means by which health care practitioners can give structure and organization to disease prevention and health promotion programs.

Concurrent with NURS 500.

NURS 506
Advanced Pathophysiology
Three Credits

The course focuses on analyzing the complex interrelationships and interdependence of pathophysiological concepts that produce alterations in human functioning across the life span. This serves as a primary component of the foundation for clinical assessment, decision-making, and management for advanced nursing practice. Topics include an interpretation of natural history and clinical manifestations for specific illnesses, in terms of their etiology and pathogenesis. A description of the relationship between pathological changes in body defense and the illness experience is also included. The features of pathophysiological processes

involved in the body's reactions to injury and infection, the immune response, circulatory disturbances and abnormalities of cellular growth will be emphasized. Topics also include a description of the relationship between pathophysiological processes and alterations in body fluids and the pathophysiological processes involved in altered endocrine, exocrine and neuromuscular functions.

Concurrent with NURS 507.

NURS 507
Advanced Pharmacology
Three Credits

The course centers on an analysis of the essential pharmacotherapeutics for advanced nursing practice. Study of actions and effects of drugs on human systems across the life-span. Analysis of the scope of legal professional nursing responsibilities related to pharmacology in an expanded role will be emphasized. Topics include description and identification of the actions, effects, uses and potential interaction of the major categories of drugs. The pharmacological processes of absorption, distribution, metabolism, excretion and the factors that influence the pharmacokinetics of drugs will also be emphasized. Topics also include an analysis of the physiological effects of drugs on the individual across the life-span and the factors which influence the patient response to therapeutic agents, adverse drug reactions and appropriate interventions. The controversies related to the biodisponibility and bioequivalence of drugs will be discussed.

Concurrent with NURS 506

NURS 508
Diagnostics & Differential Diagnosis
Three Credits

The course focuses on a presentation of the critical thinking process necessary to form differential diagnoses. These differential diagnoses are established after analyzing the findings from the history, physical assessment, and results of laboratory findings (diagnostic findings). This course emphasizes the importance of ordering the correct diagnosis. It includes discussion and practice of proper specimen collection, handling of specimens, analysis of microscope slides, and radiologic examinations.

Requisites: NURS 506 or concurrent with approval of first 8 weeks.

NURS 509
Pharmacology for FNPs
Three Credits

The course center on practical exposure to the general principles of providing and monitoring drug therapy for FNP's. Topics include identification of a disease, review of the drugs used to treat the disease, selecting treatments, special patient considerations and therapy adjustment. Finally, students will learn how to provide primary therapy, as well as second and third line therapy when the first line fails. The course also includes discussion of the prescription, monitoring and evaluation of pharmacological agents utilized to treat common disease states. The teaching needed by individuals and families to properly adhere to prescribed pharmacology therapy will be discussed. The roles and responsibilities of the FNP in prescribing pharmacological agents, monitoring and evaluating patient responses will also be discussed. The collaborative role of the FNP with the physician when consulting in providing, monitoring and evaluating the pharmacologic agents is identified and discussed.

Requisite: NURS 510, NURS 507, concurrent with NURS 511.

NURS 510
Primary Care I
Four Credits

This course is the first of a three part series focusing on established primary care evidence based guidelines. Provides advanced practice knowledge of standard protocols through discussion in conference sessions and clinical experience. Emphasizes wellness, illness prevention, treatment of chronic and acute diseases throughout the life span. Builds upon the advanced practice core courses of advanced pathophysiology, advanced pharmacology, advanced history taking, and physical assessment. Integrates theories of collaborative practice, cultural competencies, ethical and legal issues. Covers: Health Maintenance Issues, Skin Disorders, and Infection diseases, general symptoms, behavioral problems, mental health and HEENT. The clinical portion of the course will consist of 19 hours per week for the duration of this 8 week course making a total of 150 hours.

Requisites: NURS 501, NURS 504, NURS 506, NURS 507, NURS 508

NURS 511
Primary Care II
Four Credits

This course is the second of a three part series focusing on established primary care evidence based guidelines. Provides advanced practice knowledge of standard protocols through discussion in conference sessions and clinical experience. Emphasizes wellness, illness prevention, treatment of chronic and acute diseases throughout the life span. Builds upon the advanced practice core courses of advanced pathophysiology, advanced pharmacology, advanced history taking, and physical assessment. Covers: Pulmonary and Cardiovascular Disorders, Gastrointestinal Diseases, Metabolic and Endocrine Disorders. The clinical portion of the course will consist of 19 hours per week for

the duration of this 8 week course making a total of 150 hours.

Requisite: NURS 510

NURS 512
Primary Care III
Four Credits
This is the third course of a three part series focusing on established primary care patient care evidence based guidelines. Provides advanced practice knowledge of standard protocols through discussion in conference sessions and clinical experience. Emphasizes wellness, illness prevention, treatment of chronic and acute diseases throughout the life span. Builds upon the advanced practice core courses of advanced pathophysiology, advanced pharmacology, advanced history taking, and physical assessment. Covers: Genitourinary Disorders, Prenatal Care, Post partum and Family Planning, Womens Health Issues, Sexually Transmitted Diseases, Hematologic Disorders, Musculoskeletal Disorders and Ambulatory Emergencies. The clinical portion of the course will consist of 19 hours per week for the duration of this 8 week course making a total of 150 hours.

Requisite: NURS 511, NURS 509

NURS 513
Residency
Four Credits
Culminating clinical experience consisting of 240 hours of clinical practice in an ambulatory setting providing comprehensive primary care services to underserved communities. Students will be paired with qualified and credentialed nurse practitioners or physicians who will be oriented and trained and certified to serve as preceptors. Provides a depth of practice during 8-hour clinical days. Students develop and refine FNP competencies through clinical hours/experience. Weekly seminar conferences provide a forum for clinical case study discussions, case presentations and preparation for the mock FNP certification test, which is required to be taking and passed in order to approve the course.

Requisite: NURS 512

NURS 514 @
Nutrition in Nursing
Three Credits
This is a course offered to nursing graduate students as an elective option. The course is designed to fill the need for primary care and clinical nutrition education for advanced practice nursing students. Discussion of the fundamentals of nutritional care including assessing nutritional status, Identifying risk factors, determining nutrient requirements, and selecting appropriate intervention. Life cycle nutrition, functional elements of nutrition support, pharmacologic considerations, trends in nutritional care, and nutritional considerations in specific disease states are also covered.

NURS 515
Concepts and Issues in Occupational and Environmental Health Nursing
One Credit
Concepts and issues in occupational and environmental health (OEHN) are discussed. Discussion of the implications for the OEHN and the changing population and work force, changes in health care benefits and their influence in the type of services available to workers. Work-related factors, workers in Labor Unions, work environment and its implications for OEHN as the legal concepts relevant to OEHN practice are described. The Acts of Occupational Safety and Health, the American with disabilities, family and medical leave. The professional issues advancing the specialty including the credentialing in nursing, ethics and ethical conflicts and the competencies in OEHN are also discussed with an overview and discussion of the economic, political and business forces and how they affect OEHN practice.

NURS 516
Application of Epidemiology in Occupational & Environmental Health
Two Credits
Principles of epidemiology and the application of the epidemiology model, to understand the relationship between work and health. This course will focus on the health and safety of the employed population. Describes the host as any susceptible human being, the agents, factors associated with illness, and injury as occupational exposures, and their classifications. The external conditions that influence the interaction of the host and agents in the environment are discussed and analyzed. The exposures, associated work-related diseases and conditions according to selected job categories. The student analyzes and use, findings from epidemiologic studies of worker populations and epidemiologic studies of work-related problems, to identified and prevent hazardous work-site exposures and to provide high-quality health services in their clinical practice.

Requisites: NURS 515 & NURS 517

NURS 517
Environmental Health and Toxicology
Two Credits
In this course the student is introduced to an effective community health practice, which requires a concentration of efforts and actions on specific parts of the environment. The development of knowledge based in the nursing process to the practice of environmental health and the principles of environmental practice are incorporated throughout this

course. The student learns how the health personnel cope with risk conditions in the environment. The mechanisms and pathways of exposures to environmental health hazards and the basic prevention and control strategies, the interdisciplinary nature of effective interventions, and the role of a nurse in research and advocacy in the environmental health are discussed. The specific aspects of the toxic environment that must be addressed in health protection are discussed with emphasis to methods of assessing community risks to environmental exposures and potential health problems. Federal agencies which manage affairs related to toxic environment are discussed, including safety and health at the workplace.

Requisite: NURS 518

NURS 518
Health, Ergonomics & Safety Hazard of the Workplace
Two Credits

This course prepares the student to manage factors associated with worker's increased risk to adverse responses to hazardous workplace exposure. The biologic, chemical, environmental/mechanical, physical, and psychosocial workplace hazards and the appropriate control measure for illness and injury are discussed. Description of the elements of a comprehensive ergonomics program, regulations of ergonomics, and its relationship with workers compensation law. Effective disaster planning and management according to legislation are analyzed. Prevention strategies in eliminating or reducing exposure to risk factors are described. The student learns how to identify the strategic processes that are essential to the development, implementation, and evaluation of comprehensive occupational health and safety programs. Specific components of these programs and examples of programs that can be used as models in the occupational health setting are discussed. The student will be familiarized with OSHA Standards and programs that impact the health and productivity of the worker population.

Requisite: NURS 515

NURS 519
Adult Care I
Four Credits

First part of a three part series course in Adult Nurse Practitioner Practice. Competencies in the diagnosis and treatment focused on Adult Nurse Practitioner practice. Presentation of the critical thinking process necessary to form differential diagnoses emphasizing the importance of ordering the correct diagnosis. Discussion, performance and interpretation of the theoretical knowledge and development of psychomotor skills for advanced health assessments and techniques with clients of adolescents and young, middle and older adults. This first part focuses on health maintenance, behavioral, metabolic, infections skin and problems of the eyes. The clinical portion of the course will consist of 15 hours per week for the duration of this 8 week course making a total of 120 hours.

Requisites: NURS 504, NURS 505, NURS 506, NURS 507 & NURS 508

NURS 520
Adult Care II
Four Credits

Second part of a three part series course in Adult Nurse Practitioner Practice. The student synthesizes theoretical, scientific and contemporary clinical knowledge for the assessment and management of both health and illness states. Development of competencies incorporating the concepts of health promotion, health education and disease prevention. Discussion of health priorities according to Healthy People 2010. Analysis of human caring as an essential dimension of advanced practice nursing work, specially dealing with workers crisis at the workplace, injury, health maintenance problems and change in occupational health practices. This second part focuses on the following systems: ENT, upper airways and lower respiratory system, cardiovascular and gastrointestinal. The clinical portion of the course will consist of 15 hours per week for the duration of this 8 week course making a total of 120 hours.

Requisites: NURS 519

NURS 521
Adult Care III
Four Credits

Third part of a three part series course in Adult Nurse Practitioner Practice. The student synthesizes theoretical, scientific and contemporary clinical knowledge for the assessment and management of both health and illness states. Development of competencies incorporating the concepts of health promotion, health education and disease prevention. Discussion of health priorities according to Healthy People 2010. Analysis of human caring as an essential dimension of advanced practice nursing work, specially dealing with workers crisis at the workplace, injury, health maintenance problems and change in occupational health practices. This third part focuses on the following: genitourinary, gynecology, sexually transmitted diseases, HIV/AIDS, musculoskeletal, neurologic, and minor emergencies. The clinical portion of the course will consist of 15 hours per week for the duration of this 8 week course making a total of 120 hours.

Requisites: NURS 520

NURS 522
Residency
Four Credits
Culminating clinical experience consisting 270 hours of clinical practice. Sixty (60) hours are urgent care evaluations where students complete injury assessments and treatment. Forty (40) hours in orthopedics focused on common injuries, forty (40) hours at occupational medicine clinics, forty (40) hours distributed in pulmonary, dermatology, and neurology patient care. Ninety (90) additional hours in the occupational health unit industry, focused on program planning and role immersion. Students will be paired with qualified and credentialed nurse practitioners or physicians who will be oriented and trained and certified to serve as preceptors. Weekly seminar conferences provide a forum for clinical case study discussions and case presentations.

Requisites: NURS 521

NURS 523
Epidemiology and Biostatistics
Three Credits
This course presents the principles and methods of epidemiology and biostatistics applied to clinical practice. Seminar discussions are focused on the knowledge and skills needed for the clinical leader to assume accountability for client outcomes. This can be reached through the assimilation and application of research-based data to design, implement and evaluate health care.

Requisites: NURS 505 & NURS 502 or NURS 502 Concurrent

NURS 524
Evidence-Based Practice
Three Credits
This course presents evidence-based practice (EBP) as an approach that enables the clinical leader to provide excellent quality of care in meeting the multifaceted needs of their patients and families. Emphasis is given to the fact that when the healthcare provider knows how to find, critically appraise, and use the best evidence, and when patients are confident that their healthcare provider is using evidence-based care, optimal outcomes are achieved for all. The course includes weekly seminars and 50 hours of clinical experience where the student conducts a project applying the EBP model.

Requisites: NURS 504, NURS 505, NURS 506 & NURS 507

NURS 525
Health Care Systems and Organization
Four Credits
This course focuses on the role of the Clinical Nurse Leader in modern organizations which are presented as complex adaptive systems. Management implications of complex adaptive system theories are analyzed, giving particular attention to the specific prescriptions for information systems that emerge from these theories. Students are expected to participate in weekly seminar discussions based on key managerial approaches and to complete a total of 150 hours of clinical experience.

Requisite: NURS 524

NURS 526
Clinical Nurse Leader I
Four Credits
This course is the first of a two part immersion experience in full-time practice on the Clinical Nurse Leader role. Each student has a designated clinical preceptor and a faculty member over a period of 8 weeks. The full-time immersion experience also includes weekly seminars for discussion of theoretical concepts. This first part focuses on the development of nursing leadership skills by providing knowledge and practice in: horizontal leadership, effective use of self, conceptual analysis of the CNL role and lateral integration of care. Students are expected to participate in weekly seminar discussions and to complete a total of 150 hours of clinical experience.

Requisite: NURS 525

NURS 527
Clinical Nurse Leader II
Four Credits
This course is the second of a two part immersion experience in full-time practice on the Clinical Nurse Leader role. Each student has a designated clinical preceptor and a faculty member over a period of eight (8) weeks. The full-time immersion experience also includes weekly seminars for discussion of theoretical concepts. This second part focuses on care management and resource management. Students are expected to participate in weekly seminar discussions and to complete a total of 150 hours of clinical experience.

Requisite: NURS 526

DESCRIPTION OF DOCTORAL COURSES

BASIC SCIENCES

Basic science courses within the naturopathic medicine program emphasize anatomy, physiology, and biochemistry as the foundation for further basic sciences and all clinical courses. Emphasis is also given to histology, pathology, pharmacology, immunology, infectious diseases, embryology, neuroscience and research methods. Students advance beyond the simple learning of scientific facts and integrate systematically the information from basic science disciplines into a unified model of human organization and function. This educational style requires students to assume

an active role in the learning process and encourages them to adopt this inquisitive behavior for a lifetime. Problem-solving, clinical cases and examples are an integral part of the basic science curriculum. The laboratory facilities at Universidad Central del Caribe in Bayamón will be utilized for the Human Gross and Developmental Anatomy (BASC 700) course. This course will be taught by faculty from Universidad Central del Caribe.

BASC 700
Human Gross and Developmental Anatomy
Ten Credits

This course includes the normal structure of the human body as the primary Requisite for the disciplines of physiology, pathology and all other clinical sciences. Embryology is an integral part of medical anatomy in that it provides a basis for understanding normal adult anatomical relationships as well as congenital malformations and gynecological problems. Designed to teach the principles of human morphology through classical methods and more recent techniques of visualization, emphasizing the importance of those principles to clinical practice. A study of the regional, functional and developmental anatomy of the human body with emphasis on the anatomical correlates of clinical medicine. The study and visualization of the different components of the human body is accomplished through a complete dissection of the human body. The course includes a laboratory in addition to lectures. The laboratory is conducted using prosection demonstration and dissections of the cadaver by the students supervised by faculty members.

Requisite: Admission to the ND Program

BASC 702, 708, 712
Medical Physiology and Organ Systems Anatomy I, II, III
(One and Two 6 credits each and Three 7 credits)

This is a three-term course sequence in which students are exposed to major principles, agents, and processes governing human physiology. An in-depth exploration of the anatomy, physiology, and development of the internal organs; muscle and bone; blood and the immune system; cardiovascular, pulmonary, renal, gastrointestinal, endocrine physiology, and autonomic nervous system. Emphasis is given in the first course to homeostasis as a framework for human physiology, cell structure and protein functions. The second course includes discussion and clinical application of cardiovascular, pulmonary, and renal physiology. The third course focuses on gastrointestinal and endocrine physiology. Application of the content presented on previous courses to specific body systems.

Requisite for BASC 702: Admission to the ND Program

Requisites for BASC 708: BASC 700, BASC 702

Requisites for BASC 712: BASC 706, BASC 708

BASC 706
Medical Histology
Four Credits

Microscopic anatomy of all major body tissues, including an introduction to histopathology. The purpose of this course is to lead the student to understand the microanatomy of cells, tissues and organs and to correlate structure with function. Includes theory and laboratory experience.

Requisites: BASC 700, BASC 702, BASC 704

BASC 704, 710, 714
Biochemistry and Cellular Systems I, II, III
Three Credits each

This is a three-part course series covering biochemical structures and pathways of metabolism including the role of vitamins and minerals, the basic functions of the immune system with emphasis on its role in protecting against microbial infections and tumors; and immune deficiency states, autoimmunity, and psychoneuroimmunology. Patient cases are presented to the students as the biochemistry is discussed. This strengthens the link between biochemistry and medicine and allows the student to learn about this interaction as the biochemistry is presented. The first course begins with an introduction and an overview of fuel metabolism. Chemical and biological foundations of biochemistry are discussed. The rest of the course is dedicated to gene expression and protein synthesis. The second course begins with a discussion of fuel oxidation and the generation of ATP. The rest of the course is dedicated to carbohydrate metabolism. The third course covers lipid and nitrogen metabolism.

Requisite for BASC 704: Admission to the ND Program

Requisites for BASC 710: BASC 700, BASC 702, BASC 704

Requisite for BASC 714: BASC 710

BASC 711
Neuroanatomy
Four Credits

This course is intended to supply the basic knowledge of the structure and organization of the human central nervous system together with some understanding of its functional and clinical significance. For this purpose, it presents both neuroanatomy and neurophysiology as a single integrated discipline. Clinical correlations throughout the course are presented in a concise form to furnish some insight of the abnormal changes in function that go hand in hand with structural lesions of the nervous system.

Requisites: BASC 700, BASC 706, BASC 708, BASC 710

Co-requisite: BASC 711L

BASC 716
Microbiology and Public Health
Three Credits

This course presents the major concepts in microbiology and infection diseases in a pathobiological framework and within the context of clinical cases. This framework allows for students to actively participate through problem-based learning. The basic concepts of microbiology, immunology and pharmacology are first introduced and how these disciplines relate to infections. The course progresses to a description of major infections agents and the diseases they cause with a discussion on how the major systems of the body are affected by infection. Also includes the etiology, prevention, and control of communicable diseases from a public health point of view. Emphasis is given on the interaction between the health professional and public health agencies.

Requisites: BASC 700, BASC 708, BASC 710

Co-requisites: BASC 712, BASC 714

BASC 718
Immunology
Three Credits

This course teaches the basic functions, concepts and physiology of the immune system with emphasis on its role in protecting against microbial infections and tumors, immune deficiency states, autoimmunity, allergies, viruses and psychoneuroimmunology. Patient cases are presented to the students as the immunology is discussed. This strengthens the link between immunology and medicine and allows the student to learn about this interaction as the immunology is presented.

Requisites: BASC 702, BASC 704, BASC 706

CLINICAL SCIENCE EDUCATION

The clinical science courses teach the knowledge and skills necessary to understand and diagnose disease. To prepare for the role of primary-care physician, the student of Naturopathic Medicine must become skilled in correlating and presenting histories, subjective symptoms, physical signs and appropriate laboratory tests with a detailed evaluation of the body's level of health and the patient's mental balance and well-being.

CLSE 701, 709, 717, 723
Human Pathology I, II, III, IV
(3 credits each)

A four-course series of Human Pathology offered for the development of diagnostic and assessment skills. During this sequence the normal and abnormal changes that occur in the human body when confronted with internal and external stressors that create an imbalance in homeostasis and the development of disease are studied. They also learn the foundations of general and systemic pathology and gain a solid understanding of pathogenesis and its relevance to clinical practice. The textbook used for this course includes a CD supplement containing "virtual slides"- digitalized pathology specimens that students can use using state-of-the-art viewer software on their computers. This sampling is taken from a larger and complete Virtual Pathology Slide Set, available for students purchase. The first course includes the study of medical terminology, definitions, concepts, and the basic mechanisms of pathological change. The process of immunopathology, cell injury, inflammation, necrosis, cancer, and healing are considered in depth. Also included are the immune and genetic disorders. The second course covers hemodynamic disorders; environmental and nutritional pathology; infectious and parasitic diseases. Also a discussion of the blood vessels and heart; the pathology of the respiratory, hepatobiliary systems, pancreas and gastrointestinal tract. The third course includes the kidney; the lower urinary tract and male reproductive system; the female reproductive system; the breast; hematopathology; the endocrine system; and diabetes mellitus. The fourth course covers the amyloidoses, the skin, the head and neck, bones and joints, skeletal muscle, nervous system, the eye and cytopathology.

Requisites for CLSE 701: BASC 700, BASC 706, BASC 711, BASC 712, BASC 714, BASC 716, NPMP 701, NPMP 703

Requisite for CLSE 709: CLSE 701

Requisites for CLSE 717: CLSE 709, CLSE 711

Requisite for CLSE 723: CLSE 717

CLSE 703, 711, 719
Clinical and Physical Diagnosis I, II, III
Six Credits each

This course is the first of a three part series. This clinical exposure is their first at the university and in many ways will set the tone and pace for their future growth. Students put into practice their basic physical exam skills in the taking of vital signs (blood pressure, pulse, temperature, and respiration). The clinical portion of each course will consist of 24 hours. This first part of the clinical rotation expands on the academic technical instruction received during the Clinical and Physical Diagnosis I class. Emphasis is given to communication skills and interaction with patients on a one-to-one basis. This second part of the clinical rotation expands on the academic technical instruction received during the Clinical and Physical Diagnosis II class. Emphasis is given to heart and bowel sound diagnosis. Discussion, performance and interpretation of the theoretical knowledge and development of psychomotor skills for advanced health

assessments and techniques with clients of all ages and cultural backgrounds. Development of a client database and a differential diagnosis of common client complaints encountered in primary health care practice settings. Emphasis is given to the development of skills necessary to obtain and record a comprehensive adult, elderly, adolescent and well-client database.

Requisites for CLSE 703: BASC 711, CLSE 701

Co-requisite for CLSE 703: CLSE 703L

Requisite for CLSE 711: CLSE 703

Co-requisite for CLSE 711: CLSE 711L

Requisite for CLSE 719: CLSE 711

Co-requisite for CLSE 719: CLSE 719L

CLSE 705, 713, 721
Laboratory Diagnosis I, II, III
Two Credits each

This three course sequence is coordinated with pathology and clinical and physical diagnosis courses. Students are taught indications for specific tests and evaluation of test results. Includes theory and laboratory experience. In the lab portion of class, students learn medical laboratory techniques used in physicians' offices. The first course provides an overview of diagnostic testing, fundamentals of diagnostic tests and explains the theoretical framework of diagnostic testing. Abstract concepts such as sensitivity, specificity and prevalence are discussed and how theory influences a test's reliability. The rest of the course is dedicated to a detailed discussion of laboratory guidelines to diagnostic tests, from patient preparation and education to post-test care. The second course provides an in-depth look at more than 300 diagnostic tests that reflect the current trends in clinical pathology and laboratory medicine. Each discussion starts with a general description of the test, its purpose and relative cost, patient preparation, normal findings and reference values, abnormal findings and their significance, and factors that can interfere with proper test administration and accuracy. The third course moves the student forward with test selection and process. The student is guided through the use of patient's primary sign or symptom as a starting point and advancing through various test findings until reaching an accurate differential diagnosis.

Requisites for CLSE 705: BASC 711, BASC 712, BASC 714, BASC 716, CLSE 701

Requisite for CLSE 713: CLSE 705

Co-requisite for CLSE 713: CLSE 713L

Requisite for CLSE 721: CLSE 713

Co-requisite for CLSE 721: CLSE 721L

CLSE 707, 715
Pharmacology I, II
Three Credits each

This course consists of two parts were the principles of pharmacodynamics and pharmacokinetics (absorption, metabolism, distribution, excretion) of drug are discussed. Students are expected to classify and describe the pharmacodynamics, side effects, and the therapeutic uses of drug prototypes from the contemporary drug classes. The first course includes the study of drugs acting at synaptic and neuroeffector junctional sites; central nervous system; drug therapy of inflammation; drugs affecting renal, cardiovascular, and gastrointestinal function The second course includes the study of chemotherapy of parasitic infections, microbial disease, neoplastic disease, immunomodulation, drugs acting on the blood and the blood forming organs, hormones, dermatology, opthalmology and toxicology.

Requisites for CLSE 707: BASC 711, BASC 712, BASC 714, BASC 716, CLSE 701, CLSE 725

Requisite for CLSE 715: CLSE 707

CLSE 725
Environmental Medicine and Toxicology
Two Credits

Concepts of toxicology are discussed with the major groups of environmental toxins. Methods of human metabolism and excretion of toxins and the obstacles to excretion are included. Specific toxin-overload-related illnesses are discussed. Assessment and treatment includes of specific case studies.

Requisites: BASC 712, BASC 714, BASC 716, NPMP 701, NPMP 703

CLSE 727, 729, 731
Diagnostic Imaging I, II, III
Two Credits each

This three part course sequence presents the radiographic anatomy and findings of common disorders, with emphasis on differential diagnosis and clinical correlation. Students also learn about the operation of x-ray equipment and how to order imaging studies. Other basic methods covered are ultrasonography, nuclear medicine, computerized tomography, magnetic resonance imaging, and their proper use in diagnosis. The first course focuses on the basic principles of how major imaging modalities function. A discussion is presented on how radiologic images are produced by the various imaging modalities in order to help the student understand what their images portray. The second and third courses systematically examine anatomic areas and major organ systems, including normal anatomy, normal anatomic variants, and commonly encountered pathology. The second course focuses on diagnostic radiology of the following: chest, abdomen, pediatric

imaging, musculoskeletal system, and spine and pelvis. The third course focuses on diagnostic radiology of the following: brain, head and neck, nuclear imaging, mammography, and interventional radiology.

Requisites for CLSE 727: CLSE 719, CLSE 721, CLSE 723

Requisites for CLSE 729: CLSE 727

Requisites for CLSE 731: CLSE 729

CLSE 733
Minor Surgery
Three Credits
This course teaches students to diagnose conditions that are safely treated by minor surgery in the office, and the principles and practical techniques involved in the performance and follow-up of office surgical procedures. The basics of performing minor surgery are discussed and practiced which include selection of proper instruments, equipment and supplies needed for a procedure, sterile technique and sterile field, proper selection and use of local anesthesia, lesion removal, suturing, wound care, report writing and insurance coding. Theory and practice are included.

Requisites: BOTM 705, CLSE 715, CLSE 719, CLSE 721, CLSE 731, HOME 705, MBME 705, NPCS 711

CLSE 735
Medical Genetics
Two Credits
This course covers the basis, diagnosis, and transmission of genetic disorders. Provides the student with an up-to-date, concise, and clinically relevant content in genetics. This content is presented by starting with a molecular discussion of inheritance, then focusing on the integration of the basic sciences with genetics. The discussion progress to the integration of genetics with the practice of clinical medicine.

Requisites: BASC 706, CLSE 703, CLSE 715, CLSE 731, NPCL 765, NPCL 795, NPCS 701, NPCS 702, NPCS 703, NPCS 705, PHMD 702.

NATUROPATHIC CLINICAL SCIENCE

These courses present the naturopathic perspective on diagnosis, prevention and treatment of disease by system and region. They integrate multiple treatment forms with the principles of naturopathic philosophy into case management and criteria for referral. Guest lecturers discuss their specialty areas in each course. Classes focus on learning how to gather clinically relevant information, the importance of physical exams and laboratory findings, creating a differential diagnosis and choosing appropriate therapeutics, both conventional and Naturopathic. Because of time element and large quantity of material, lecture is utilized as the main teaching methodology combined with a study guide for each course. The study guide points each student to information that is of particular importance for understanding the course and in preparation for the written exams. Specific areas of the course are illustrated with weekly case presentations.

NPCS 701
Gynecology
Two Credits
This course focuses on the diagnosis, management, and treatment of gynecological problems. Effective naturopathic treatment protocols are discussed. Criteria for referral to specialist and integration of naturopathic medicine with conventional medicine are also covered.

Requisites for NPCS 701: BOTM 703, CLSE 715, CLSE 719, CLSE 721, CLSE 723, HOME 700, NUTR 702, ORME 704

NPCS 702
Obstetrics
Two Credits
This course prepares the student to provide basic healthcare appropriate for the pregnant woman. The student is prepared to screen for risks and to offer patients referrals and informed choices related to hospital or out-of-hospital birthing options.

Requisites: BOTM 703, CLSE 715, CLSE 719, CLSE 721, CLSE 723, HOME 700, NUTR 702, ORME 704

NPCS 703
Cardiology
Three Credits
This course focuses on the pathophysiology, diagnosis and treatment of conditions affecting the heart, and circulatory system. Students are taught to assess and treat common cardiac conditions with naturopathic therapeutic modalities and to refer effectively when necessary.

Requisites: BOTM 703, CLSE 715, CLSE 719, CLSE 721, CLSE 723, CLSE 729, HOME 700, NUTR 702, ORME 704

NPCS 705
Pediatrics
Two Credits
This course presents a thorough review of physical examination, recognition of normal variations, and diagnosis of the pediatric conditions encountered in a general family practice. Discussion of the treatment management of pediatric disorders. Appropriate use of naturopathic therapeutic modalities and referral is stressed. Guest lecturers discuss their specialty areas.

Requisites: BOTM 703, CLSE 715, CLSE 719, CLSE 721, CLSE 723, CLSE 729, HOME 700, ORME 704, NUTR 702

NPCS 707
Eyes, Ear, Nose and Throat
Two Credits
Upon completion of this course, students will have the knowledge required for diagnosing, treating, and referring most common ophthalmologic and otolaryngeal problems. Emphasis is placed on integrating naturopathic and conventional therapeutics according to naturopathic philosophy and evidence-based practice.

Requisites: BOTM 705, CLSE 715, CLSE 719, CLSE 721, CLSE 723, CLSE 731, HOME 704, NUTR 706, ORME 712

NPCS 709
Rheumatology and Pain
Two Credits
The inflammatory conditions involving the connective tissue structures of the body, including muscles and joints are discussed. Emphasis is placed on autoimmune disorders and their treatment, with both conventional and naturopathic therapeutics.

Requisites: BOTM 705, CLSE 715, CLSE 719, CLSE 721, CLSE 723, CLSE 731, HOME 704, NUTR 406, ORME 712, PHMD 710,

NPCS 711
Emergency Medicine
Two Credits
In this course, the students learn how to recognize and respond to medical emergencies with conventional and naturopathic techniques, while making appropriate decisions for referral. The course provides a brief history of emergency medicine, and basic principles of resuscitation and shock. Clinical case studies are utilized as a tool to help students find ways to relate the basic science content from other courses to its clinical application in the emergency medicine setting.

Requisites: BOTM 705, HOME 704, NPCL 765, NPCL 795, NPCS 703, NPCS 705, NPCS 707

NPCS 713
Oncology
Two Credits
Discussion of the diagnostic, etiologic, prognostic, preventive, and epidemiologic information for cancers of common sites. Conventional, naturopathic, integrative, and innovative treatment approaches are included.

Requisites: BOTM 705, HOME 704, NPCL 810, NPCS 707, NPCS 709, NPCS 711, NPCS 733, ORME 714

NPCS 715
Dermatology
Two Credits
This course includes the diagnosis of common skin disorders. The principles of no suppressive and curative therapies are discussed. Conventional medical treatments and naturopathic therapies are presented.

Requisites: CLSE 715, CLSE 719, CLSE 721, CLSE 731, CLSE 733, HOME 704, NPCL 808, NPCS 701, NPCS 705, NPCS 707, NPCS 709, NPCS 711, NUTR 704, ORME 704

NPCS 717
Endocrinology
Two Credits
The course focuses on the complex interactions of the body's hormonal systems. The causes and effects of hormonal imbalance are also covered. Diagnosis and treatment of common endocrine disorders are presented.

Requisites: HOME 704, NPCL 765, NPCL 795, NPCL 808, NPCS 705, NPCS 707, NPCS 709, NUTR 704, ORME 712

NPCS 719
Geriatrics and Aging
Two Credits
This course covers the process of aging and the psychosocial and physical problems of older populations. Diagnostic and therapeutic techniques are discussed. Emphasis is placed on preventing, reversing, or retarding degenerative changes and on maximizing health.

Requisites: HOME 704, NPCL 765, NPCL 795, NPCL 808, NPCS 705, NPCS 707, NPCS 709, NUTR 704, ORME 712

NPCS 721
Gastroenterology and Proctology
Two Credits
This course presents the disorders of the digestive tract and associated organs. Physical exam, lab and x-ray studies, management and treatment of GI diseases; and optimization of digestive function are explored through lecture and case discussions. Also included is the diagnosis, assessment, and treatment with naturopathic modalities of conditions of the anus and rectum. The use of office surgical techniques is emphasized.

Requisites: CLSE 715, CLSE 731, CLSE 733, HOME 704, NPCL 765, NPCL 795, NUTR 704, ORME 708

NPCS 723
Urology
Two Credits
This course covers conventional diagnosis and the naturopathic treatment of diseases affecting the urinary tract and the male genital system. The students are exposed

to knowledge to diagnose, manage and treat urological disorders. Lecture is utilized as the main teaching methodology combined with a study guide for the course. The study guide points each student to information that is of particular importance for understanding the course and in preparation for the written exams. Specific areas of the course are illustrated with weekly case presentations.

Requisites: CLSE 733, HOME 706, NPCL 765, NPCL 795, NPCL 820, NPCS 705, NPCS 707, NPCS 709, NUTR 706, ORME 712

NPCS 725
Pneumology
Two Credits

This course focuses on common respiratory disorders including those conditions related to cardiovascular disease. Naturopathic and conventional medical therapies of acute and chronic respiratory problems are covered.

Requisites: CLSE 733, HOME 706, NPCL 765, NPCL 795, NPCL 820, NPCS 705, NPCS 707, NPCS 709, NUTR 706, ORME 712

NPCS 727
Neurology
Two Credits

This course covers the neurological assessment, diagnosis, management of neurological disorders. Naturopathic and conventional treatments of the nervous system diseases are discussed. Appropriate collaboration with specialists is stressed.

Requisites: CLSE 733, HOME 706, NPCL 765, NPCL 795, NPCL 820, NPCS 705, NPCS 707, NPCS 709, NUTR 706, ORME 712

NPCS 729
Mental Health and Psychiatry
Two Credits

This course focuses on the diagnosis, management, and treatment of psychiatric disorders. Emphasis on the principles of medical ethics in mental health and psychiatry. Students are expected to familiarize with the official nomenclature used by psychiatrists and other mental health professionals as contained in DSM-IV-TR. Discussion of different treatment modalities utilized in psychiatry. Focus is given to history taking and mental health status, treatment with naturopathic modalities, examination and making referrals when appropriate.

Requisites: BOTM 705, CLSE 735, HOME 706, NPCL 765, NPCL 795, NPCL 820, NPCS 711, NPCS 713, NPCS 717, NPCS 721, NUTR 706, ORME 712,

NPCS 731
Intravenous Therapies
Two Credits

This course presents the basic clinical rationale for intravenous (IV) therapy. Students gain the skills of IV catheter insertion procedure through laboratory practice. Treatment of complications and management of common emergencies that can occur during IV therapy are discussed.

Requisites: BOTM 705, CLSE 711, CLSE 715, CLSE 731, CLSE 733, HOME 704, NPCL 765, NPCL 795, NPCL 820, NUTR 704, ORME 712

PHYSICAL MEDICINE

These courses focus orthopedic assessment and therapeutic modalities such as touch and palpation, a variety of soft-tissue and osseous manipulation techniques, hydrotherapy and sports medicine.

PHMD 700
Principles of Hydrotherapy
One Credit

In this course, students are introduced to the principles and practices of historical and modern therapeutic use of the application of water. Included are alternating temperature, colon hydrotherapy, constitutional hydrotherapy, cleansing, steam and sweat.

Requisites: BASC 700, BASC 702, NPMP 701, NPMP 703

PHMD 702
Introduction to Physical Medicine and Orthopedics
Two Credits

This course introduces the study of physical medicine as a diagnostic and therapeutic tool. Students have the opportunity to compare therapies such as soft-tissue techniques, muscle energy technique, and cranial therapy. Regional and physical assessment and etiology are also discussed. The theories of injury, inflammation and fibrosis of repair are emphasized. Orthopedic biomechanisms and goals of varying therapeutic treatments of acute and chronic joint dysfunctions are examined.

Requisites: BASC 700, BASC 712, BASC 714, BASC 716, CLSE 701, CLSE 719

PHMD 704
Physiotherapy Modalities
Two Credits

Students gain knowledge related to the application of physiotherapy modalities within naturopathic medical perspective. Student will learn through theory and laboratory experience, the treatment of diseases with physiotherapy modalities. Emphasized are exercise, soft-tissue therapies, physiotherapy, manipulative techniques and medicines.

Requisites: CLSE 719, PHMD 702

Co-requisites: PHMD 704L

PHMD 706, 708
Naturopathic Manipulative Therapy I, II
Two Credits Each
This two-course sequence covers the evaluation of normal and abnormal findings of the spine and extremities through assessment of positional deviations, assessment of joint mobility through static and motion palpation, grading of orthopedic muscular strength and joint range of motion, differential diagnosis of common and special disorders, and evaluation of disease and injury of the musculoskeletal system. Emphasis is on regional orthopedic physical assessment and osseous manipulation. Manipulative treatment includes the sacro-iliac, lumbo-sacral, lumbar, thoracic, ribs, cervical and occipital spinal areas, extremities and visceral manipulative techniques. During the second course student are expected to formulate a Naturopathy Manipulative Therapy Treatment Protocol.
Requisites for PHMD 706: BASC 700, BASC 712, CLSE 719, PHMD 702

Requisite for PHME 706: PHMD 704

Requisite for PHME 708: PHMD 706

PHMD 710
Sports Medicine and Orthopedics
Three Credits
Principles of using exercise as a preventive and therapeutic tool are discussed. Diagnosis and treatment of sports injuries likely to be seen by a general practice naturopathic physician are covered. Methods of fitness testing, exercise prescription and the use of exercise as therapy are studied. Students evaluate sports and orthopedic injuries and analyze the appropriate treatments.

Requisite: PHMD 706

PHMD 712
Palpation
Two Credits
In this course, students are introduced to the techniques and concepts of palpation plus learning and developing skills to live human anatomy.

Requisites: BAS 700, BASC 711, BASC 712, BASC 716

ORIENTAL MEDICINE

The focus of this curriculum is to train students to practice safely and competently while providing basic competency in oriental medicine for the diagnosis and treatment of common disorders using traditional Chinese medicine, acupuncture techniques, Chinese botanical medicine, and ayurvedic medicine.

ORME 700
Fundamentals and Theory of Chinese and Oriental Medicine
Three Credits
This course introduces the fundamental concepts of Oriental Medicine, including Yin Yang, Five Elements theory, Zang-Fu organ systems, Qi, blood and body fluid, Meridian systems, TCM etiology, treatment Principles and Eight Phases Theory. The content lays a foundation for other courses.

Requisites: BASC 700, BASC 702, BASC 704, NPMP 701, NPMP 703

ORME 702
Traditional Chinese Medicine Diagnosis
Two Credits
The basic concepts of Traditional Chinese Medicine (TCM), history and diagnosis are studied. TCM case-history taking, including the classic ten questions and significance of elucidated symptoms are explored. TCM classic diagnostics techniques such as tongue and pulse diagnosis and the syndrome differentiation based on Eight Principles are also discussed.

Requisites: BASC 712, BASC 714, BASC 716, CLSE 701, MBME 701, ORME 700

ORME 704, 706
Meridians and Points I, II
Three Credits Each
This series of two courses includes a comprehensive study of acupuncture meridians and points of the human body with reference to traditional Chinese locations. The traditional indications, precautions and physiological responses according to modern research are emphasized. Labs, lectures and illustrations are coordinated to provide students with hand-on skills and a thorough understanding of points and meridians. During the first course palpation skills are introduced, demonstrated and practiced by the students with faculty supervision. Palpation skills are further developed during the second course.

Requisites for ORME 704: CLSE 711, CLSE 713, CLSE 717, ORME 702

Requisites for ORME 706: ORME 704

ORME 708
Traditional Chinese Medicine Pathology
Two Credits
In TCM, treatment plans are based on symptom patterns. In this course, students are exposed to the theoretical concepts which will enable them to identify key symptoms of the Zang-Fu organ patterns and the method of syndrome differential diagnosis of TCM according to Zang-Fu organ system theory. Therapeutic principles and acupuncture treatments for individual patterns are also discussed.

Requisites: ORME 706, MBME 701

ORME 710
Acupuncture Techniques
Two Credits
This course covers basic needling techniques used in acupuncture, such as needle insertion, tonification, reduction, moxibustion, auriculotherapy, laseracupuncture, electroacupuncture and scalp acupuncture. Practical experience in needling technique occurs under the supervision of an experienced acupuncturist. Aseptic measure and safe needling techniques are emphasized.

Requisite: ORME 706

Co-requisite: ORME 710L

ORME 712
Chinese Botanical Medicine
Two Credits
An introduction to Chinese herbal medical history, botanical classification and taxonomy, medicinal properties of herbs, major groups and formulation principles, and 55 commonly used herbs. Also commonly used commercially available herbal preparations which are often used as therapies in Traditional Chinese Medicine.

Requisites: BOTM 705, ORME 708

ORME 714
Fundamentals of Ayurvedic Medicine
Three Credits
This course presents the fundamental principles and practices of ayurveda as an introduction to Ayurvedic medicine. It considers concepts of recognizing Ayurvedic body-type and psychological personality, customizing the health plan to suit the unique constitution, ayurvedic nutrition and diet therapy, Ayurvedic herbology and gentle detoxification through Ayurvedic Pancha-Karma therapy.

Requisites: BOTM 705, HOME 706, NPMP701, NPMP 703

BOTANICAL MEDICINE

The botanical courses provide training in the use of plant medicines in naturopathic practice, including their prescription, manufacture, and field recognition.

BOTM 701, 703, 705, 707
Botanical Medicine I, II, III, IV
(One, Two and Three 3 credits each and Four 2 credits)
This is the first of a four-course series on Botanical Medicine. These courses are designed to prepare students for the use of botanicals in a naturopathic practice. Traditional, historical, and scientific uses of plants are explained. Students are encouraged to develop an appreciation for plants. Each course includes outdoor field trips to enhance the plant study. The first course is an introduction and covers the basics of botanical medicine. Other topics are the study of specific herbs use for first aid and those commonly used for gastrointestinal and musculoskeletal conditions. The second course continues the discussion on Materia Medica with a focus on organ systems including the liver, and the gallbladder; as well as the Urinary, and Endocrine systems. Emphasis is given to clinical applications of the herbs studied. The third course continues the discussion on Materia Medica with a focus on the reproductive and cardiovascular systems. Emphasis is given to clinical application of the herbs studied. The fourth course Materia Medica continues to be discussed with a focus on respiratory and immune systems. This last course includes laboratory experience with the purpose of applying and integrating the content covered on the previous three courses. Emphasis is given to clinical application of the herbs studied.

Requisites for BASC 700, BASC 712, BASC 714, BASC 716, NPMP 701, NPMP 703

Requisite for BOTM 703: BOTM 701

Requisite for BOTM 705: BOTM 703

Requisite for BOTM 707: BOTM 705

BOTM 709
Medicinal Plants PR & Caribbean
Three Credits
Review the history, ethnopharmacy, pharmacognosy, clinical and basic science, and healing properties of most common medicinal plants of Puerto Rico and the Caribbean. Theory will be complemented with fold trips and making of herbal preparations in order to learn and apply this herbs in a safety, effective and economic matter..

Requisite: BOTM 701

NATUROPATHIC MEDICINE PHILOSOPHY AND PRACTICE

NPMP 701
History of Medicine
Two Credits
The course presents a discussion of the historical paths processes and development of different medical practices including conventional, allopathic, Chinese, herbalist, ayurvedic, homeopathic and naturopathic medicine. Also provides students with the philosophical and theoretical foundation to critically examine ethical issues in medical practice.

Requisite: Admission to the ND Program

NPMP 703
Naturopathic Medicine Principles and Philosophy
One Credit
This course introduces the philosophical basis of naturopathic medicine and the role of the naturopathic physician in today's world. Students will examine the roots of naturopathic medicine and the historical development of naturopathic philosophy. Emphasis is placed on the six guiding principles of naturopathic care: "the healing power of nature, treat the whole person, first do no harm, identify and treat the cause, prevention, and doctor as teacher".

Requisite: Admission to the ND Program

NPMP 705
Business Practice
Three Credits
This course focuses on the development of a business plan. Emphasis on the knowledge and skills necessary to formulate one. Financial management, office organization, hiring of personnel, and other relevant topics are also discussed.

Requisite: NPCL 820

NPMP 707
Medical Jurisprudence and Naturopathic Ethics
One Credit
This course presents medical health care law as it applies to naturopathic physicians. This is an interactive course that explores ethical principles universal in all branches of medicine, while examining the ethical principles unique to naturopathic medicine. Material presented includes ethical issues generated by students themselves, as well as case studies and information provided by the Puerto Rico Board of Naturopathic Examiners.

Requisite: NPCL 828

CLINICAL NUTRITION

The nutrition courses are designed to provide the student with a comprehensive knowledge of clinical nutrition. Emphasis is given to the use of diet and nutritional supplements to treat and prevent a wide variety of diseases.

NUTR 700, 702, 704, 706
Clinical Nutrition I, II, III, IV
Three Credits Each
This is the first of a four-course sequence on clinical nutrition. Students learn to use diet and nutritional supplements to treat and prevent a variety of diseases. This course provides a discussion of the foundation for a working knowledge of the actions, recommended intake, and therapeutic uses of macronutrients (carbohydrates, fats, proteins) and micronutrients (vitamins, minerals, accessory nutrients). Dose, toxicity, and deficiency issues for each vitamin and mineral are also discussed. This course explores diet and its relationship to health and disease. Emphasis is on the health effects of different foods and special diets. Students develop skills in diet assessment and counseling. This course integrates Nutrition 700 and 702 content and application in the clinical setting. Students learn to critically evaluate various nutritional therapies for the prevention and treatment of specific diseases. The course provides an evidence-based approach to clinical nutrition, with an emphasis on dietary manipulation, vitamin and mineral supplementation, and the use of accessory nutritional factors. The third course focuses on cardiovascular, musculoskeletal and neuropsychiatric disorders. The fourth course focuses on disorders of the gastrointestinal, integumentary, ENT and genitourinary systems.

Requisites for NUTR 700: BASC 700, BASC 712, BASC 714, BASC 716

Requisite for NUTR 702: NUTR 700

Requisite for NUTR 704: NUTR 702

Requisite for NUTR 706: NUTR 704

MIND AND BODY MEDICINE EDUCATION

These courses emphasize the patient's ability to learn how to listen to their body for signs of health or imbalance. The naturopathic physician needs to listen closely for clues to the patient's health found in symptoms from the body, the mind, and the spirit. The patient collaborates in learning about self-care and how to experience a sense of well-being which comes from a state of health.

MBME 701, 703, 705
Fundamentals of Mind and Body Medicine I, II, III
Two Credits Each
These three courses sequential comprises the foundations necessary to understand the dynamics, medical science, psychobiology of mind and body healing, psychoneuroimmunology and spiritual dimensions in healing. The basic concepts related to different approaches such as meditation, imagery, hypnosis, biofeedback, prayer, yoga therapy, music therapy, shamanism and relaxation. A discussion of available research and critical analysis of these therapeutic approaches is presented. The role of behavioral diagnosis, healing and appropriate indications and referrals are addressed. Also included in this course is the role of behavioral assessment and diagnostic healing, appropriate indications, and referrals. The third course continuing discussing the practice of different therapeutic approaches, indications and referrals.

Requisites for MBME 701: BASC 700, BASC 702, BASC 704, NPMP 701, NPMP 703

Requisites for MBME 703: MBME 701

Requisites for MBME 705: MBME 703

HOMEOPATHY

The courses in homeopathic medicine prepare the student to be competent in case-taking, and management of the patient through the prescription of homeopathic medicines for both acute and chronic conditions. Emphasis is on the recognition of the body's process of healing. Students are exposed to the historical, current and evolving use of homeopathic medicines in Naturopathic practice.

HOME 700, 702, 704, 706
Homeopathy I, II, III, IV
Two Credits Each

This is the first of a four-course sequence on homeopathic education. Study of classical homeopathy as taught by Hahnemann and Kent. This course provides an introduction to the principles and philosophy of classical homeopathy. Students learn about vitalistic medicine, the history of vitalism, the vital force in health and disease, the nature of medicines, and ways to affect the vital force. Also included is the study of the essence, keynotes and characteristics of the polycrest remedies. The second course presents a discussion of constitutional homeopathy. Emphasis on case taking, case analysis, evaluation of remedy action, and the follow-up interview. Students will be able to assess and classify the remedy reaction, gain an understanding of Kent's Repertory, and learn the arrangement, schema, and language of repertory. The study of polycrest remedies continues. Use of Kent's Repertory, with emphasis on the mental and general sections. Students further their knowledge of constitutional homeopathy, with emphasis on case analysis, the follow-up interview, evaluation of remedy action, and the second prescription. Study of the polycrest remedies continues. This is the fourth of a four-course sequence on homeopathic education. This course focuses on prescribing homeopathic remedies for acute ailments by using keynote symptoms and repertory.

Requisites for HOME 700: NPMP 701, NPMP 703, CLSE 703, CLSE 705

Requisites for HOME 702: HOME 700

Requisites for HOME 704: HOME 702

Requisites for HOME 706: HOME 704

HEALTH SCIENCES

The courses of the health sciences curriculum address the fundamentals of advanced scientific method in medicine; health promotion and the practices and policies; and evidence-based research. Students learn scientific literature review and evaluation of reliability of published studies. They also select an area of interest and conduct an evidence-based clinical research project.

HESC 700
Clinical Research Methods
Two Credits

This is the first research course required from Naturopathic Medicine students. Specific attention is given to the relationship between research outcomes and clinical practice. This course prepares students to critically analyze research literature in the health sciences. 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.

Requisites: BASC 700, BASC 7002, BASC 704, NPMP 701, NPMP 703

HESC 702
Health Promotion and Disease Prevention: Transcultural Considerations
Two Credits

Discussion of health priorities according to Healthy People 2010. Analysis of human caring as an essential dimension of the clinical practice of health professionals, especially dealing with life crises, health maintenance problems, and change in health practices. Discussion of demands made by changing life-styles and disease patterns, new and complex technologies, shifting demographics, global economies, dramatic health system changes and sociobiological and environmental threats to health and safety. Development of culturally competent holistic plans of care that address the health promotion and disease prevention needs of client populations. Theoretical models are presented as the means by which health care practitioners can give structure and organization to disease prevention and health promotion programs.

Requisites: BASC 706, BASC 712, BASC 714, BASC 716

HESC 704
Evidence-Based Practice Project
Three Credits

This course presents evidence-based practice (EBP) as an approach that enables the clinical leader to provide excellent quality of care in meeting the multifaceted needs of their patients and families. Emphasis is given to the fact that when the healthcare provider knows how to find, critically appraise, and use the best evidence, and when patients are confident that their healthcare provider is using evidence-based care, optimal outcomes are achieved for all.

Requisites: HESC 700, HOME 704, MBME 704, NPCL 820, NUTR 704, ORME 712, PHMD 710

SPECIALTY COURSES
NATUROPATHIC CLINICAL PRACTICE

Students gain practical clinical skills by working under the supervision of licensed naturopathic physicians both at UT primary teaching clinic and at other health care facilities. Students begin learning through observation and gradually gain more responsibility for patient care. All patient care is under direct supervision of licensed physicians.

NPCL 765
Diagnostic Imaging Practium
Two Credits
This practicum gives students practical insight into the appropriate x-rays to order for a variety of common conditions as well as a clear understanding of the information they can get from having a professional take and interpret x-rays for them. This course takes the material taught in CLSE 727, 729 & 731. Diagnostic Imaging and makes it practical and accessible to the students.

Requisites: CLSE 729, CLSE 731

NPCL 770
Clinical Field Observation Seminar I
Two Credits
These are three independent study courses where students complete up to a total of 180 of preceptorship clinical experience with licensed doctorate-level clinical professionals (ND, MD, DO, DC, DPM). Of those hours 90 must be with a licensed naturopathic physician. The clinical field observation hours will not count until the Preceptor Agreement letter has been submitted and approved. Students will play an observation role with only minor assistance to their preceptor. Students must show current CPR certification. Evidence of observations signed by preceptors is submitted by students. The clinical portion of the course will consist of 5 hours per week for the duration of this 12 weeks course making a total of 60 hours. Covers: Homeopahty, Chinese Medicine and Botanical Medicine.

Requisites: CLSE 703, CLSE 705, CLSE 707

NPCL 775
Clinical and Physical Rotation I
Two Credits
Students enter clinic during their second year of training. This clinical exposure is their first and in many ways will set the tone and pace for their future growth. During the first rotation students put into practice their basic physical exams skills in the taking of vital signs. They also continue developing heart and bowel sounds diagnosis. Emphasis is placed on learning how to interact with patients on a one-basis.

Requisites: CLSE 703, CLSE 705, CLSE 707, MBME 703

NPCL 780
Clinical Field Observation Seminar II
Two Credits
Students will play an observation role with only minor assistance to their preceptor. The clinical field observation hours will not count until the Preceptor Agreement letter has been submitted and approved. Preceptor will also evaluate students, based on questioning of their understanding of the cases seen. Evidence of observations signed by preceptors is submitted by students. The clinical portion of the course will consist of 5 hours per week for the duration of this 12 week course making a total of 60 hours. Covers: Obstetrics/Midwifery, Gynecology and Physical Medicine.

Requisites: NPCL 770, MBME 705

NPCL 785
Clinical and Physical Rotation II
Two Credits
Students enter clinic during their second year of training. This clinical exposure is their first and in many ways will set the tone and pace for their future growth. This 36 hours Clinical rotation expands on the Clinical and Physical Diagnosis I class and laboratory. During the second rotation students practice their physical assessment skills through history taking and physical exams among each other. Emphasis is placed on learning how to interact with patients on a one-basis.

Requisites: CLSE 711, NPCL 775

NPCL 790
Clinical Field Observation Seminar III
Two Credits
Students will take on a more active role. Students will assist in the physical examination and research for the case. Preceptors will expect students to come prepared to discuss cases in conference and to provide input into diagnosis and treatment. The clinical field observation hours will not count until the Preceptor Agreement letter has been submitted and approved. Evidence of observations signed by preceptors is submitted by students. The clinical portion of the course will consist of 5 hours per week for the duration of this 12 week course making a total of 60 hours. Covers: IV Therapies, Surgeons and Chiropractors.

Requisites: BOTM 705, CLSE 733, HOME 704, NPCL 780, NPCS 709, NPCS 711, NPCS 814, NUTR 704, ORME 712

NPCL 795
Laboratory Results Practicum
Two Credits
Twelve hours of small group discussions of actual laboratory results. Each student receives a packet of laboratory report forms and questions about the reports. Students review the material and discuss the reports and questions in detail. In

addition, students can discuss other lab results about which they may have questions.

Requisites: CLSE 711, CLSE 713, CLSE 715, CLSE 729

Co-requisites: CLSE 719, CLSE 721, CLSE 723

NPCL 800, 802, 804, 806, 808, 810
Clinical Secondary Shifts I to VI
(2 credits each for a total of 12 credits)

Clinical Secondary Shift (I to VI) are clinical courses that students take in their third year. Secondary function as integral members of the treatment team, primarily observing, under the direction and supervision of the physician and in cooperation with the primary, who leads the student team. As the primary takes the patient's case, the secondary listens and observes, asking questions and performing physical exams when appropriate. Students practice the clinical laboratory skills they learned in the second year laboratory diagnosis classes, including phlebotomy, microscopy, urine analysis, and wet prep examination. The intent is for students to become more familiar and comfortable with all of the clinical laboratory's operations, requirements, and machinery. Students must pass a phlebotomy practical examination in order to enter the clinic as a primary. A minimum total hours required is 288 (minimum of 50 hours per course). Also students must pass GPA-2 to enter as a primary.

Requisites for NPCL 800: CLSE 715, CLSE 719, CLSE 721, CLSE 723, HOME 702, MBME 703, NUTR 702, ORME 704, PHMD 700

Requisites for NPCL 802: CLSE 715, CLSE 719, CLSE 721, CLSE 723, HOME 702, MBMB 703, NUTR 702, ORME 704, PHMD 700

Requisites for NPCL 804: BOTM 705, HOME 704, NPCL 800, NPCL 802, NUTR 704

Requisites for NPCL 806: BOTM 705, HOME 704, NPCL 800, NPCL 802, NUTR 704

Requisites for NPCL 808: NPCL 804, NPCL 806, PHMD 704, PHMD 706

Requisites for NPCL 810: NPCL 804, NPCL 806, PHMD 704, PHMD 706

NPCL 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832 & 834
Clinical Primary Shift I to XII
(2 credits each for a total of 24 credits)

Clinical Primary Shift (I to XII) are a series of clinical courses that students take in their fourth year, which provide a realistic look at the development of a naturopathic practice, as well as expose students to the options in prescribing naturopathic medicines. These courses include working shifts in the different clinics, with the goal of presenting students with the realities of stocking and maintaining an office medicinary among other clinical skills. A minimum total hours required is 624 a minimum of 50 hours per course except NPCL 834 100 hours.

Requisites for NPCL 812: NPCL 765, NPCL 795, NPCL 808, NPCL 810, NPCS 703, NPCS 705, PHMD 708

Requisites for NPCL 814: NPCL 765, NPCL 795, NPCL 808, NPCL 810, NPCS 703, NPCS 705, PHMD 708

Requisites for NPCL 816: NPCL 765, NPCL 795, NPCL 808, NPCL 810, NPCS 703, NPCS 705, PHMD 708

Requisites for NPCL 818: NPCL 812, NPCL 814, NPCL 816

Requisites for NPCL 820: NPCL 812, NPCL 814, NPCL 816

Requisites for NPCL 822: NPCL 812, NPCL 814, NPCL 816

Requisites for NPCL 824: NPCL 818, NPCL 820, NPCL 822

Requisites for NPCL 826: NPCL 818, NPCL 820, NPCL 822

Requisites for NPCL 828: NPCL 818, NPCL 820, NPCL 822

Requisites for NPCL 830: NPCL 824, NPCL 826, NPCL 828

Requisites for NPCL 832: NPCL 824, NPCL 826, NPCL 828

Requisites for NPCL 834: NPCL 824, NPCL 826, NPCL 828

NPCL 838
Knowledge Integration
Two Credits

This is a capstone course where students are provided with the opportunity to integrate theoretical and clinical practice knowledge and skills. Competencies are reviewed and a variety of practice exam are provided in preparation for the Naturopathic Physicians Licensing Examination (NPLEX) test. The course finalizes with a mock test.

Requisites: NPCL 824, NPCL 826, NPCL 828

INTERNATIONAL SCHOOL OF DESIGN AND ARCHITECTURE

History and Mission of the Architecture Program

The mission of our architecture program is to diversify the architectural practice through a multi-disciplinary approach. We intend to graduate well-rounded professionals capable of reinventing their practice within the local and global field demands. The diversity of academic backgrounds of our students will guarantee, in turn, diversity of professional execution, both in industry and in the private sector. This variety of perspectives will enable our students to become fundamental pieces in the roles of integrating a collaborative contemporary architecture practice both locally and globally.

The program has been designed in two areas. The first part of our proposed architectural program is based on a design studio in which a group of people will work together in a large open studio space developing their own individual design projects. Projects are developed through problem-based learning. This type of interaction provides the ideal environment for our students to understand where they are coming from, to individually develop their ideas, and to acquire all the knowledge needed for later collaboration processes while at also providing an opportunity for students to share ideas, learn from one another and contribute to each other productively. This strategy responds to the International School of Design and Architecture interdisciplinary and holistic approach to the development of our students.

The second part of the program is a design studio that begins with the selection of one project from all student projects. The studio, using the method of learning-by-doing, transforms into a design-build firm where students work in collaboration to achieve a hands on project. The students will work on every phase of the design, development and construction project, including all the methods and practice phases, as are viability study, concept and schematic design, design development, contract document, construction procurement and construction administration stages.

The mission of our program is to develop well-rounded professionals that can achieve different roles in the design and construction industry. By offering a problem-based learning and learning-by-doing education, the students will be prepared with a better understanding of the diverse knowledge and skills portrayed in an architect's work.

Curricular Goals and Content

The 3.5 year Master of Architecture (M. Arch) is the proposed professional degree to be offered by the International School of Design and Architecture. The pre-requisite for the entry of the Master's Program is a Bachelor's Degree in any other concentration than architecture. Students, once evaluated, may be required to enroll in additional preparatory courses, as Art or Architectural History, Physics and Calculus courses. The curricular goals for this program are:

- To create an architectural professional that balances theory and practice.
- To provide our graduates with the knowledge, skills and experience to practice architecture in the design and construction industries.
- To prepare our graduates to participate, in a collaborative manner, in professional teams of architecture and related disciplines.
- To promote diversity in the development of the professional that emerges from approaching different perspectives on economical, technological, cultural, and social issues but maintaining a consistency in actions, values, methods, and principles for the professional integrity.

Graduates from the Master´s Degree in Architecture will:

1. Be critical thinkers demonstrating knowledge in architectural history and theory discourses.
2. Be able to understand and develop the fundamentals issues pertaining the creation of buildings.
3. Be able to communicate graphically a representation of two- and three- dimensional design.
4. Understand and describe technological, environmental and structural systems affecting buildings.
5. Apply the laws, codes and standards that regulate the profession.
6. Apply the ethical principles that rule the profession.
7. Have the competence to viable a project accommodating needs of the client and general public.

8. Collaborate with other professionals and be able to assume a leadership role in the design and construction industry.

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MASTER'S DEGREE

Architecture

Total Credits	**114**
Core Courses	**30**
Design Courses	**51**
Specialty Courses	**27**
Elective Courses	**6**

Core Courses		**(30 credits)**
ARCH 501	Introduction to History and Theory	3
ARCH 505	Visual Thinking and Communication	3
ARCH 511	Architectural History I	3
ARCH 515	Computer Studio	3
ARCH 521	Architectural History II	3
ARCH 601	Theory in Architecture	3
ARCH 604	Project and Practice Management I: Contracts and Legal Issues	3
ARCH 704	Project and Practice Management I: Scheduling and Coordination	3
ARCH 712	Building Design and Construction System IV: Field Hours	3
ARCH 714	Project and Practice Management IV: Project Delivery	3

Design Courses		**(51 credits)**
ARCH 500	Architectural Design I	6
ARCH 510	Architectural Design II	6
ARCH 520	Architectural Design III	6
ARCH 600	Architectural Design IV	6
ARCH 610	Design/Build Studio I	6
ARCH 700	Design/Build Studio II: Construction Drawings and Project Manual	9
ARCH 710	Design/Build Studio III: Construction Field Hours	12

Specialty Courses		**(27 credits)**
ARCH 512	Building Design + Construction Systems I: Materials + Technology	3
ARCH 513	Structural Systems I	3
ARCH 522	Building Systems I	3
ARCH 523	Structural Systems II	3
ARCH 524	Codes and Regulations	3
ARCH 602	Building Systems II	3
ARCH 612	Building Design and Construction System II: Environmental Issues	3
ARCH 614	Project and Practice Management II: Cost	3
ARCH 702	Building Design + Construction Systems III: Detailing Construction	3

Elective Courses **(6 credits)**

Students may select six credits among specific professional interest courses.

COURSE DESCRIPTIONS

ARCH 500
Architectural Design I
Six Credits
This course is a requirement in this program. It introduces students to fundamental architectural issues — form, program, site, materials, and structure — through projects that emphasize exploration and conceptual dimensions of architectural design and research.

Requisite: Admission to the Graduate Architectural Program.

ARCH 501
Introduction to History and Theory
Three Credits
This course is a requirement in the program. It is an introductory survey of the history and theory of the western architectural tradition. The course intends to help the student develop an understanding of the social, cultural, political and economic context in which architecture is produced and interpreted. The students will also become familiar with basic terminology and theoretical approaches.

Requisite: Admission to the Graduate Architectural Program.

ARCH 505
Visual Thinking and Communication
Three Credits
This is a required course in the program. It will cultivate the ability to communicate through drawing, thus enhancing visual, perception, and simultaneous thinking while developing the student's representational skills.

Requisite: Admission to the Graduate Architectural Program.

ARCH 510
Architectural Design II
Six Credits
This course is a requirement in the program. It addresses the role of architecture in constructing social relations by creating innovative proposals for contemporary dwellings and site while exploring the impact of new technological and social developments.

Requisite: ARCH 500

ARCH 511
Architectural History: 1700-1900
Three Credits
This course is a requirement in the program. It focuses its discussions in the architectural production of the 18th and 19th Century, and examines the importance of this particular period in the formation of the Modern Movement.

Requisite: ARCH 501

ARCH 512
Building Design and Construction Systems I: Materials and Technology
Three Credits
This course is a requirement in the program. It incorporates the content of Architect Registration Examination 4.0 Building Design and Construction Systems and as stated in NCARB, develops the application of knowledge and skills in the selection of systems, materials, and methods related to building design and construction.

Requisite: ARCH 500

ARCH 513
Structural Systems I
Three Credits
This course is a requirement in the program. It incorporates the content of Architect Registration Examination 4.0 Structural Systems and as stated identifies and incorporates the fundamental principles of general structures in the design and construction of buildings.

Requisite: ARCH 500

ARCH 515
Computer Studio
Three Credits
This course is a requirement in the program. It emphasizes architectural representation and encourages the use of CAD process for exploration and documentation generating three-dimensional renderings and models with Rhino.

Requisite: ARCH 505

ARCH 520
Architectural Design III
Six Credits
This course is a requirement in the program. It will explore the conditions that define mixed-use space in a context defined by the inclusion of public space and the city and the interrelationship of site with structure.

Requisite: ARCH 510

ARCH 521
Architectural History: 1900 – Today
Three Credits
This course is a requirement in the program. It observes the development of western modernity in the transition between the 19th Century into the 20th Century, to the euphoric utopianism of the Avant Garde, on to Corporate Modernism in the Americas.

Requisite: ARCH 511

ARCH 522
Building Systems I
Three Credits
This course is a requirement on the program. It incorporates the content of Architect Registration Examination 4.0 Building Systems and, as stated, emphasizes on the evaluation, selection, and integration of plumbing and mechanical systems in building design and construction.

Requisite: ARCH 512

ARCH 523
Structural Systems II
Three Credits
This course is a requirement in the program. It incorporates the content of Architect Registration Examination 4.0 Structural Systems and as stated identifies and incorporates the fundamental principles of general structures emphasizing on lateral force in the design and construction of buildings.

Requisite: ARCH 513

ARCH 524
Codes and Regulations
Three Credits
This course is a requirement in the program. It incorporates the content of Architect Registration Examination 4.0 in various exams, and incorporates building and specialty codes, zoning, and other regulatory requirements in building design, construction systems and programming and planning in site developments.

Requisite: ARCH 510

ARCH 600
Architectural Design IV
Six Credits
This course is a requirement in the program. It focuses on the role of the architectural object as a component of the urban whole. The studio provides for the conception of architecture, not only as an objectified existence, but also as a intrinsic element of an urban system. The course's investigation will begin as an analysis of a localized urban context and will advance its investigations into a second stage, by the selection of a specific site included in the devised master plan. "

Requisite: ARCH 520

ARCH 601
Theory in Architecture
Three Credits
This course is a requirement in the program. It offers an overview of the role of treatises in architectural history. It approaches a critical review of influential texts and excerpts that shaped architectural thought, and serves as an intellectual scaffolding to scrutinize their further interpretation and application.

Requisite: ARCH 521

ARCH 602
Building Systems II
Three Credits
This course is a requirement in the program. It incorporates the content of Architect Registration Examination 4.0 Building Systems and, as stated, emphasizes on the evaluation, selection, and integration of mechanical, electrical, and specialty systems in building design and construction.

Requisite: ARCH 522

ARCH 604
Project and Practice Management I: Contracts and Legal Issues
Three Credits
This course is a requirement in the program. It incorporates the content of Architect Registration Examination 4.0 in various exams, and introduces students to the legal and strategic characteristics of the design industry in contemporary professional practice and ethics.

Requisite: ARCH 524

ARCH 610
Design/Build Studio I
Six Credits
This course is a requirement in the program. It is the first course of the design/build studio: the application of knowledge and skills required for the schematic design and development of construction documents for a 1,000f2 structure. This course will integrate ARCH 612 and ARCH 614 in the studio.

Requisites: ARCH 600, ARCH 602, ARCH 604

ARCH 612
Building Design and Construction Systems II: Environmental Issues
Three Credits
This course is a requirement in the program. It incorporates the content of Architect Registration Examination 4.0 Building Design and Construction Systems and, as stated, develops the application of knowledge and skills by applying sustainable design principles to the selection, design and construction of building systems.

Requisites: ARCH 600, ARCH 602, ARCH 604

ARCH 614
Project and Practice Management II: Costs
Three Credits
This course is a requirement in the program. It will introduce the student with different types of estimates, estimating software, and the construction estimating process, and estimating the various parts of a project to consider cost implications of design decisions.

Requisites: ARCH 600, ARCH 602, ARCH 604

ARCH 700
Design/Build Studio II
Nine Credits
This course is a requirement in the program. It is the second course of the design/build studio: the programming and planning of the 1,000f2 structure to begin construction. This course will integrate ARCH 702 and ARCH 704 in the studio.

Requisites: ARCH 610, ARCH 612, ARCH 614

ARCH 702
Building Design and Construction Systems III: Detailing Construction Documents
Three Credits
This course is a requirement in the program. It complements ARCH 700 and integrates the student's knowledge and skills in the building design and construction systems in the development of detailed drawings of the design/build project.

Requisites: ARCH 610, ARCH 612, ARCH 614

ARCH 704
Project and Practice Management III: Scheduling and Coordination
Three Credits
This course is a requirement in the program. It complements ARCH 700 and covers the programming and management process of the design/build project, including the scheduling and coordination of the construction phase.

Requisites: ARCH 610, ARCH 612, ARCH 614

ARCH 710
Design/Build Studio III
Twelve Credits
This course is a requirement in the program. It is the last course of the design/build studio: the construction phase of the 1,000f2 structure. This course will integrate ARCH 712 and ARCH 714 in the project execution.

Requisites: ARCH 710, ARCH 712, ARCH 714

ARCH 712
Building Design and Construction Systems IV: Field Hours
Three Credits
This course is a requirement in the program. It complements ARCH 710 and enhances the building and structural technology knowledge with the integration of the field experience in the design/build project construction.

Requisites: ARCH 710, ARCH 712, ARCH 714

ARCH 714
Project and Practice Management IV: Project Delivery
Three Credits
This course is a requirement in the program. It complements ARCH 710 and will acquaint the student with integrated practice and integrated project delivery in the construction phase of the design/build project.

Requisites: ARCH 710, ARCH 712, ARCH 714

SCHOOL OF NATURAL SCIENCES AND TECHNOLOGY

The School of Science and Technology at Universidad del Turabo 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.

Mission
It is the mission of the School to foster liberal education, to encourage the generation of knowledge, and to contribute to the good 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, to recognize and value diverse perspectives, and to solve problems creatively and with perseverance.

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.

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MASTER'S DEGREE

Science in Environmental Management
Science in Environmental Analysis

Description

The graduate program in environmental sciences at Universidad del Turabo is scientific-technological in its nature. It seeks to develop professionals that will assume responsibility and leadership in their fields. They will be prepared to provide alternatives for the conservation of the environment and to present solutions to environmental situations in our society, enabling them to conserve, manage and restore natural systems. The program adopts the position of sustainable development formation, an approach we hope to instill in our graduates.

By participating in our interdisciplinary program, the student will develop a global vision of environmental situations and the possible alternatives originating from different perspectives.

Goals and Objectives

The goal of the program is to train professionals with research and academic skills, which enable them to work successfully in jobs that require natural resource conservation, environmental problem-solving and decision-making.

The Graduate Program has as its goal the pursuit and dissemination of knowledge in the interdisciplinary field of environmental science. The program offers a master's degree in environmental sciences with two specializations; one in Environmental Management, with a focus on the management and disposal of solid waste; and the other in Environmental Analysis, emphasizing research on chemical processes and effects.

The graduate student of ***Environmental Analysis*** will be able to: suggest the best method and technology; characterize and classify environmental contaminants; evaluate chemical results; and apply the state and federal regulations.

The graduate student in ***Environmental Management*** will be able to: apply or establish the procedures for handling and disposal of waste; develop and work with the stability of the evaluation programs and the environmental management in private or public enterprises.

Curriculum

By using an interdisciplinary approach throughout the curriculum, this program gives the students the necessary

theoretical and technical tools to develop successfully in the world of applied environmental sciences. The coursework will provide the student with the necessary environmental literacy to work toward a sustainable future.

The program has two specializations: environmental analysis and environmental management, with four basic components: the core courses, the specialization courses, the elective courses, and the research project.

The core courses are designed to offer our students the basic concepts in environmental sciences, law, waste, and quality standards. With the environmental research project, the graduate student continues learning how to evaluate the information, to establish the parameters for research, to write and defend a proposal, and to evaluate the results and offer scientific reasoning for them.

Students must have undergraduate courses in the Fundamentals of Environmental Sciences and Statistics for Environmental Sciences. These courses will be offered as leveling courses (ENSC 500 and STAT 505) and will not be considered for graduation purposes

MASTER'S IN ENVIRONMENTAL SCIENCES: SPECIALIZATIONS: ENVIRONMENTAL MANAGEMENT AND ENVIRONMENTAL ANALYSIS OPTIONS IN BIOLOGICAL AND CHEMICAL ANALYSIS

Total Credits	**35***
Core Courses	**17**
Research Courses	**6**
Specialization Courses	**12**

Core Courses **(17 credits)**

STAT 750	Experimental Design	3
ENSC 751	Environmental Laws, Ethics and Public Policy	3
ENSC 752	Water Quality Management	3
ENSC 753	Soil Management	3
ENSC 754	Air Quality Management	3
ENSC 755	Graduate Seminar I	1
ENSC 756	Graduate Seminar II	1

Research Courses **(6 credits)**

ENSC 810	Master's Thesis	6

Specialization Courses **(12 credits)**

(Choose 12 credits in courses within the 700 and 800 codes)

Code	Course Title	Crs.	option		
			mgmt.	biol.	chem.
ECON 700	Environmental Economics		x	x	x
ENSC 706	Wildlife Management	3	x	x	
ENSC 707	Environmental Geology	3	x	x	x
ENSC 709	Environmental Management and Planning	3	x		
ENSC 710	Environmental Management Plans and their Corporate Application	3	x		
ENSC 760	Hazardous Waste Operations and Emergency Response	3	x		
ENSC 730	Solid Waste Management	3	x		x
ENSC 737	Renewable Energy Sources and Issues	3	x	x	x
ENSC 763	Environmental Evaluation	3	x		
ENSC 770	Classification and Characterization of Hazardous Wastes	3			x
ENSC 790	Special Topics in Environmental Sciences	1-6	x	x	x
ENSC 841	Environmental Remediation	3	x	x	x
ENSC 865	Environmental Toxicology	3		x	x
BIOL 712	Applied Mycology	3		x	
BIOL 713	Microbial Ecology	3		x	
ENSC 844	Environmental Biotechnology	3		x	x
BIOL 843	Environmental Microbiology	3		x	
CHEM 735	Environmental Chemical Analysis I	3			x
CHEM 736	Environmental Chemical Analysis II	3			x
CHEM 850	Environmental Catalysis	3	x	x	x
CHEM 852	Materials for Pollution Control	3	x	x	x
CHEM 861	Nanotechnology	3	x	x	x

*Students are recommended to enroll in elective courses beyond the required academic degree load.

MASTER'S DEGREE IN ENVIRONMENTAL SCIENCES: ENVIRONMENTAL MANAGEMENT PROFESSIONAL PLAN

Total Credits	**43**
Core Courses	**19**
Specialization Courses	**9**
Elective Courses	**6**
Advanced Courses	**6**
Special Project or Internship	**3**

Core Courses **(19 credits)**

ENSC 500	Fundamentals of Environmental Sciences	3
STAT 505	Statistics as an Instrument in Research	3
ENSC 751	Environmental Laws, Ethics and Public Policy	3
ENSC 753	Soil Management	3
ENSC 752	Water Quality Management	3
ENSC 754	Air Quality Management	3
ENSC 755	Graduate Seminar I	1
ENSC 763	Environmental Evaluation	3
STAT 750	Experimental Design	3

Specialization Courses **(9 credits)**

(Choose any 3 of the following courses)

BIOL 712	Applied Mycology	3
BIOL 713	Microbial Mycology	3

ENSC 770	Hazardous Waste Operations and Emergency Response	3
ENSC 709	Environmental Managing and Planning	3
ENSC 710	Environmental Management Plans and Their Corporate Application	3
ENSC 735	Environmental Chemical Analysis I	3
ENSC 736	Environmental Chemical Analysis II	3
ENSC 770	Classification and Characterization of Hazardous Waste	3

Electives **(6 credits)**

ENSC 707	Environmental Geology	3
ENSC 730	Solid Waste Management	3
ENSC 706	Wildlife Management	3
ECON 700	Environmental Economics	3
ENSC 737	Renewable Energy Sources and Issues	3
ENSC 790	Special Topics in Environmental Science	1-6

Advanced Courses **(6 credits)**

(Choose from the following list)

ENSC 841	Environmental Remediation	3
ENSC 839	Issues in Environmental Public Health	3
ENSC 844	Environmental Biotechnology	3
ENSC 843	Environmental Microbiology	3
CHEM 852	Materials for Pollution Control	3

Special Project or Internship **(3 credits)**

ENVM 811	Special Group Project in Environmental Management	3
ENVM 812	Internship in Environmental Management	3

DOCTORAL DEGREE

Environmental Sciences

Options Environmental Management, Environmental Biology, and Environmental Chemistry

Environmental science as a distinct academic discipline has assumed an ever-increasing role in the race to understand the link between human activities and the natural environment, as well as the related impacts of humanity on individual species, ecological systems, and human health.

The study of environmental science draws heavily upon the biological, chemical, geological, and health sciences. To this basic core of knowledge, environmental scientists add a systems approach to examine issues, problems, and solutions as part of a larger ecologically connected continuum.

As human beings in this era, we are beginning to understand some of the results and repercussions of our activities. It becomes more apparent that the scientific community needs to devote much more effort to environmental baseline studies, ecological characterization, toxin bio-concentration studies, and in the development of remediation technologies.

The demand for doctoral degree-level researchers, scientists and educators with a firm grounding in the environmental sciences is high, and with renewed global focus on the improvement of environmental conditions and industrial and agricultural processes that demand will increase over the next several decades.

Mission

The mission of the program is to stimulate pure and applied research that will improve the quality of life in the institution, the community, and the island. Our students will acquire the extensive academic and research foundations necessary to evaluate, prevent, and remediate environmental problems to safeguard our natural resources.

Ultimately, our graduates will supply their scientific expertise to industries and governments on environmental issues as well as in the development of new methodologies, technologies, and strategies to protect the environment through research in academia. Universidad del Turabo (UT) will demonstrate excellence in environmental science through the success of its graduates in the institution, the community and the island.

Objectives

1. To provide graduate students with knowledge, skills and aptitudes needed for successful careers in environmental science at academic institutions, government agencies, and in industry.
2. To graduate professionals with scientific research training, high ethical values, and commitment to their society, environment, and culture.
3. To establish collaborative relationships between the University and the external community by promoting research, cultural and community development projects that will enhance the quality of life.
4. To facilitate and encourage international initiatives that will enhance scientific communication and exchange of scientific knowledge between Universidad del Turabo and the world.
5. To create a database that will turn the University into island's leader in the understanding and solution of environmental problems as well as in the application of new technologies.

Curriculum

The doctoral (PhD) program in environmental sciences includes three specializations: chemistry, biology and

pollution management. Students from each specialization will have the following characteristics:

Biology
Upon completion of the biology specialization, the student will be prepared to:

1. Evaluate, analyze, and apply the proper biotechnological techniques to a specific environmental problem.
2. Evaluate and characterize the role of microorganisms in contaminated environments.
3. Collect and evaluate experimental data using analytical instruments such as GC-MS and HPLC in conjunction with molecular and microbiological techniques such as polymerase chain reaction (PCR), protein analysis, bacterial isolations, and DNA manipulations.

Chemistry
Upon completion of the chemistry specialization, the student will be prepared to:

1. Analyze and explain the essential principles that govern the properties of contaminants and how they behave in the environment.
2. Describe properties and applications of materials for pollution control such as zeolites, active carbon, clays, and silica gel.
3. Collect and evaluate experimental data using laboratory instrumentation such as gas chromatograph-mass spectrometer (GC-MS), high performance liquid chromatograph (HPLC), Fourier-transformed infrared spectrometer, (FT-IR), and UV-V's spectrophotometer, among others.
4. Evaluate and prevent the possibility of an occupational epidemic disease caused by industrial toxic contaminants.

Environmental Management
Upon completion of the pollution management specialization, the student will be prepared to:

1. Evaluate, analyze, and characterize pollutants in air, water, and sediments and coordinate the remediation efforts using the chemical and biological data.
2. Promote and implement the use of new technology to prevent, remediate, and eliminate contaminants.
3. Evaluate and assess the possible risk posed by a contaminant in an environment to the flora and fauna of the site.

The doctoral program will emphasize research and the search for solutions to environmental problems. The curriculum is divided into four major components: core courses; specialization courses; elective courses; and research and experimental courses.

Students must complete all core, specialization, and elective courses before their enrollment in dissertation courses.

The students will select a research/dissertation advisor prior to the end of their second semester of enrollment. The student should select his/her research/dissertation advisor primarily based on their common research interests. Once the research/dissertation advisor is selected, the advisor will communicate his/her commitment to the Dean of the Center for Doctoral Studies (CDS) in a formal letter that includes suggested research topics. The advisor-student team will have a period not to exceed two semesters following their agreement to assemble a dissertation committee and to notify the CDS with a formal letter signed by the student, advisor, and the selected dissertation committee members.

The students must complete a minimum of one year (full time commitment) dedicated to research under the direct supervision of the faculty advisor. This will be accomplished in two continuous semesters (Dissertation Research ENSC 997-998).

DOCTORAL DEGREE IN ENVIRONMENTAL SCIENCES: BIOLOGY

Total Credits	**56***
Core Courses	**17**
Research Courses	**21**
Specialization Courses	**18**

Core Courses		**(17 credits)**
STAT 750	Experimental Design	3
ENSC 751	Environmental Laws, Ethics and Public Policy	3
ENSC 752	Water Quality Management	3
ENSC 753	Soil Management	3
ENSC 754	Air Quality Management	3
ENSC 755	Graduate Seminar I	1
ENSC 756	Graduate Seminar II	1

Research Courses		**(21 credits)**
ENSC 997	Doctoral Dissertation	6

Specialization Courses (18 credits)

(Choose 9 credits in courses within the 700 and 800 codes, and a minimum of 9 credits within 900 codes in the option)

Code	Course Title	Crs.	option		
			mgmt.	biol.	chem.
ECON 700	Environmental Economics		x	x	x
ENSC 706	Wildlife Management	3	x	x	
ENSC 707	Environmental Geology	3	x	x	x
ENSC 709	Environmental Management and Planning	3	x		
ENSC 710	Environmental Management Plans and their Corporate Application	3	x		
ENSC 760	Hazardous Waste Operations and Emergency Response	3	x		
ENSC 730	Solid Waste Management	3	x		x
ENSC 737	Renewable Energy Sources and Issues	3	x	x	x
ENSC 763	Environmental Evaluation	3	x		
ENSC 770	Classification and Characterization of Hazardous Wastes	3			x
ENSC 790	Special Topics in Environmental Sciences	1-6	x	x	x
ENSC 841	Environmental Remediation	3	x	x	x
ENSC 865	Environmental Toxicology	3		x	x
ENSC 901	Environmental Risk Assessment and Management	3	X		
ENSC 902	Environmental Quality Indicators	3	X	X	X
ENSC 992	Experimental Methods in Remediation	3	X	X	X
ENSC 995	Advanced Studies in Environmental Sciences	1-6	X		
BIOL 712	Applied Mycology	3		x	
BIOL 713	Microbial Ecology	3		x	
ENSC 844	Environmental Biotechnology	3		x	x
BIOL 843	Environmental Microbiology	3		x	
BIOL 903	Ecology and Conservation of Natural Resources	3	X	X	
BIOL 914	Applied Tropical Botany	3		X	
BIOL 960	Biodiversity Conservation and Management	3	X	X	
BIOL 990	Experimental Microbiology	3		X	
BIOL 995	Advanced Studies in Environmental Biology	1-6		x	
CHEM 735	Environmental Chemical Analysis I	3			x
CHEM 736	Environmental Chemical Analysis II	3			x
CHEM 850	Environmental Catalysis	3	x	x	x
CHEM 852	Materials for Pollution Control	3	x	x	x
CHEM 861	Nanotechnology	3	x	x	X
CHEM 953	Environmental Electrochemistry	3	X	X	X
CHEM 954	Adsoption and Ionic Exchange in Solid Materials	3			X
CHEM 960	Instrumental Methods for Material Characterization	3			X
CHEM 962	Advanced Environmental Chemical Analysis	3			X
CHEM 995	Advanced Studies in Environmental Chemistry	1-6			x

*Students are recommended to enroll in elective courses beyond the required academic degree load.

DOCTORAL DEGREE IN ENVIRONMENTAL SCIENCES: CHEMISTRY

Total Credits	**56***
Core Courses	**17**
Research Courses	**21**
Specialization Courses	**18**

Core Courses (17 credits)

STAT 750	Experimental Design	3
ENSC 751	Environmental Laws, Ethics and Public Policy	3
ENSC 752	Water Quality Management	3
ENSC 753	Soil Management	3
ENSC 754	Air Quality Management	3
ENSC 755	Graduate Seminar I	1
ENSC 756	Graduate Seminar II	1

Research Courses (21 credits)

ENSC 997	Doctoral Dissertation	6

Specialization Courses (18 credits)

(Choose 9 credits in courses within the 700 and 800 codes, and a minimum of 9 credits within 900 codes in the option)

Code	Course Title	Crs.	option		
			mgmt.	biol.	chem.
ECON 700	Environmental Economics		x	x	x
ENSC 706	Wildlife Management	3	x	x	
ENSC 707	Environmental Geology	3	x	x	x
ENSC 709	Environmental Management and Planning	3	x		
ENSC 710	Environmental Management Plans and their Corporate Application	3	x		
ENSC 760	Hazardous Waste Operations and Emergency Response	3	x		
ENSC 730	Solid Waste Management	3	x		x
ENSC 737	Renewable Energy Sources and Issues	3	x	x	x
ENSC 763	Environmental Evaluation	3	x		
ENSC 770	Classification and Characterization of Hazardous Wastes	3			x
ENSC 790	Special Topics in Environmental Sciences	1-6	x	x	x
ENSC 841	Environmental Remediation	3	x	x	x
ENSC 865	Environmental Toxicology	3		x	x
ENSC 901	Environmental Risk Assessment and Management	3	X		
ENSC 902	Environmental Quality Indicators	3	X	X	X
ENSC 992	Experimental Methods in Remediation	3	X	X	X
ENSC 995	Advanced Studies in Environmental Sciences	1-6	X		
BIOL 712	Applied Mycology	3		x	
BIOL 713	Microbial Ecology	3		x	
ENSC 844	Environmental Biotechnology	3		x	x
BIOL 843	Environmental Microbiology	3		x	
BIOL 903	Ecology and Conservation of Natural Resources	3	X	X	
BIOL 914	Applied Tropical Botany	3		X	

BIOL 960	Biodiversity Conservation and Management	3	X	X	
BIOL 990	Experimental Microbiology	3		X	
BIOL 995	Advanced Studies in Environmental Biology	1-6		x	
CHEM 735	Environmental Chemical Analysis I	3			x
CHEM 736	Environmental Chemical Analysis II	3			x
CHEM 850	Environmental Catalysis	3	x	x	x
CHEM 852	Materials for Pollution Control	3	x	x	x
CHEM 861	Nanotechnology	3	x	x	X
CHEM 953	Environmental Electrochemistry	3	X	X	X
CHEM 954	Adsoption and Ionic Exchange in Solid Materials	3			X
CHEM 960	Instrumental Methods for Material Characterization	3			X
CHEM 962	Advanced Environmental Chemical Analysis	3			X
CHEM 995	Advanced Studies in Environmental Chemistry	1-6			x

DOCTORAL DEGREE IN ENVIRONMENTAL SCIENCES: POLLUTION MANAGEMENT

Total Credits	**56***
Core Courses	**17**
Research Courses	**21**
Specialization Courses	**18**

Core Courses **(17 credits)**

STAT 750	Experimental Design	3
ENSC 751	Environmental Laws, Ethics and Public Policy	3
ENSC 752	Water Quality Management	3
ENSC 753	Soil Management	3
ENSC 754	Air Quality Management	3
ENSC 755	Graduate Seminar I	1
ENSC 756	Graduate Seminar II	1

Research Courses **(21 credits)**

ENSC 997	Doctoral Dissertation	6

Specialization Courses **(18 credits)**

(Choose 9 credits in courses within the 700 and 800 codes, and a minimum of 9 credits within 900 codes in the option)

Code	Course Title	Crs.	option		
			mgmt.	biol.	chem.
ECON 700	Environmental Economics		x	x	x
ENSC 706	Wildlife Management	3	x	x	
ENSC 707	Environmental Geology	3	x	x	x
ENSC 709	Environmental Management and Planning	3	x		
ENSC 710	Environmental Management Plans and their Corporate Application	3	x		
ENSC 760	Hazardous Waste Operations and Emergency Response	3	x		
ENSC 730	Solid Waste Management	3	x		x
ENSC 737	Renewable Energy Sources and Issues	3	x	x	x
ENSC 763	Environmental Evaluation	3	x		
ENSC 770	Classification and Characterization of Hazardous Wastes	3			x
ENSC 790	Special Topics in Environmental Sciences	1-6	x	x	x
ENSC 841	Environmental Remediation	3	x	x	x
ENSC 865	Environmental Toxicology	3		x	x
ENSC 901	Environmental Risk Assessment and Management	3	X		
ENSC 902	Environmental Quality Indicators	3	X	X	X
ENSC 992	Experimental Methods in Remediation	3	X	X	X
ENSC 995	Advanced Studies in Environmental Sciences	1-6	X		
BIOL 712	Applied Mycology	3		x	
BIOL 713	Microbial Ecology	3		x	
ENSC 844	Environmental Biotechnology	3		x	x
BIOL 843	Environmental Microbiology	3		x	
BIOL 903	Ecology and Conservation of Natural Resources	3	X	X	
BIOL 914	Applied Tropical Botany	3		X	
BIOL 960	Biodiversity Conservation and Management	3	X	X	
BIOL 990	Experimental Microbiology	3		X	
BIOL 995	Advanced Studies in Environmental Biology	1-6		x	
CHEM 735	Environmental Chemical Analysis I	3			x
CHEM 736	Environmental Chemical Analysis II	3			x
CHEM 850	Environmental Catalysis	3	x	x	x
CHEM 852	Materials for Pollution Control	3	x	x	x
CHEM 861	Nanotechnology	3	x	x	X
CHEM 953	Environmental Electrochemistry	3	X	X	X
CHEM 954	Adsoption and Ionic Exchange in Solid Materials	3			X
CHEM 960	Instrumental Methods for Material Characterization	3			X
CHEM 962	Advanced Environmental Chemical Analysis	3			X
CHEM 995	Advanced Studies in Environmental Chemistry	1-6			x

COURSE DESCRIPTIONS

BIOL 560
General Mycology
Three Credits

The course focuses on the study of fungi from the standpoint of their mycological characteristics. Emphasis is on collection, culture, identification, characterization, ecology, diversity, and biological and economic importance. Includes the Oomycetes, Chytridiomycetes, Zygomycetes, Ascomycetes, Basidiomycetes and Fungi Imperfecti. Theory ipresented through lectures will be tested during the laboratory period.

BIOL 615
Environmental Industrial Microbiology
Three Credits
The course deals with industrial application of microorganisms in antibiotic production and production of other chemicals. Topics include environmental biotechnology, transformation, product stability, protection against impairment of spoilage, as well as environmental impact of solid and liquid waste management.

BIOL 619
Microbial Ecology
Three Credits
The course centers on the study of microorganisms and their interaction with the biotic and abiotic environment, which includes bacteria, fungi, algae and protozoan and cellular molecules. Emphasis is on the role of microorganisms in the global ecosystem and the preservation of environment quality.

BIOL 620
Applied Tropical Botany
Three Credits
The course is an introduction to the structure and function of the plant body. It includes establishing theoretical and practical bases for the study of plant diversity and principles of plant conservation.

BIOL 625
Topics in Biology
Three Credits
The course deals with modern topics related to biology. Each semester a topic will be discussed using recent literature. Topics such as conservation, biodiversity, evolution, applied ecology, biotechnology, bioinformatics, contamination, ecosystem management, hydrology, and remote sensing will be covered.

BIOL 683
Special Topics in Biology
One to Three Credits
The course will cover special topics in biology that may become available from time to time, including specific topics in environmental biology, ecology, zoology, botany, microbiology, or cellular and molecular biology. The format may include traditional classroom study, intensive workshops, and field courses, given by visiting professors or regular faculty. Students will take exams, submit reports and give oral presentations. Content may vary by semester. The specific content of a given semester will be indicated in a subtitle in parenthesis following the title "Special Topics in Biology" in the course calendar (programming) and student transcripts. The student may repeat the course under different subtitles for a total of 9 credits.

BIOL 684
Advanced Master's Level Study in Biology
One to Three Credits
Advanced study in Biology. Content may vary by semester. The student may register for a total of 1-3 credits in any semester. The specific content of a given semester will be indicated in a subtitle in parenthesis following the title "Advanced Master's Level Study in Biology" in the course calendar (programming) and student transcripts. Permission from instructor and approval of the Graduate Program are required before the student may enroll. The student may repeat the course under different subtitles for a total of 9 credits.

BIOL 843
Environmental Microbiology
Three Credits
The course covers general principles in environmental microbiology, and describes the different taxonomic groups and their importance in terrestrial and aquatic systems. The role of microorganisms in terrestrial and aquatic systems will be discussed. Other topics include principles of biodegradation and bioremediation, describing how microorganisms can be used to eliminate or decrease organic and metal pollutants in the environment. Aereomicrobiology, microbiology in deep surface, waste water treatments and drinking water will also be discussed.

Requisites: BIOL 320, CHEM 351-352, and BIOL 350

BIOL 990
Experimental Microbiology
Three Credits
The course focuses on hands-on research that introduces students to the strategies, instruments and challenges associated with microbiology research. The student will take on independent and original research projects. The areas of attention are the following: (1) isolation and identification of microorganisms based on traditional and modern techniques; (2) analytical imaging and microscopy techniques for identification and characterization of microorganisms, and (3) bioinformatics. Since communication is an especially important component of scientific research, this course also helps improve the written and oral communication skills of the students. One hour of lecture and three laboratory hours.

Requisites: BIOL 320, BIOL 350

BIOL 994
Practical Course in Microbiology in Extreme Conditions
Three Credits
This is a practical course that describes the interrelations of microorganisms with non-biotic factors and biogeochemical

cycles. Topics include the effect of non-biotic factors on microorganisms that thrive in extreme conditions (e.g. acidity, alkalinity, salinity, pressure, temperature, oxidation-reduction potential, oxygen variability, as well as tolerance of microorganisms to organic compounds and metals). Emphasis is on organic contamination. Comparative bioenergetics of microorganisms that inhabit extreme environmental conditions and the ecology and genetics (genes) that have enabled them to survive will be discussed. The course also includes a study of the use of extremophiles in biotechnological applications and their possible exploitation by this industry. The practical laboratory includes the application of diverse techniques for sampling, chemical analysis and estimation of microbial diversity. One hour of lecture and two laboratory hours.

Requisites: BIOL 320, CHEM 351-352, BIOL 350

CHEM 850
Environmental Catalysis
Three Credits

The course deals with fundamentals of catalytic processes for purification of exhaust gases. Catalysis for clean production will also be an important part of the course. Topics covered include the following: crystallography and chemistry of the solid surface, adsorption sites, catalysis by acids, metals and semiconductors; bi-functional catalysis, reactions of combustion, oxidation, reduction, photolysis; selective catalytic reduction on zeolites, and thermal decomposition over metals; oxidation over heavy metals oxides, combustion catalysts, and sulfur reduction with Cu on alumina catalysts; heterogeneous photocatalysis on semiconductor catalysts.

Requisites: CHEM 463-464

CHEM 852
Materials for Pollution Control
Three Credits

The course deals with pollution control materials, ionic, covalent and metallic bonding, Van der Waals interactions, the molecular orbital theory, the atomic bonding theory, crystallography, crystal chemistry of materials, phase diagrams, phase transformations, synthesis and modification of zeolites, active carbon preparation, pillared clays preparation, and silica gel preparation. Polymers, polyethylene, polyvinyl chloride, polystyrene, teflon, polyurethane, phenol-formaldehyde resins, ionic exchange resins, and catalytic air will also be discussed.

Requisites: CHEM 463-464

CHEM 853
Environmental Electrochemistry
Three Credits

The course focuses on the following topics: electrolyte solutions, electrochemical potential, electrochemical equilibrium, Donnan equilibrium, activity coefficients, Debye-Huckel theory, cell potential, Nernst equation, Faraday laws, the electrochemical cell, half-cell potential, redox reactions, charge and mass transport, electrolysis and electrodeposition, kinetics of the Electrochemical reactions, the Tafel equation, electrochemical technology and the environment, electroanalytical chemistry, instrumentation, electrode design, electrochemical reactor design, electrochemistry of organic pollutants, electrochemistry of inorganic pollutants, and potentiometric sensors.

Requisites: CHEM 463-464, ENSC 802

CHEM 854
Adsorption and Ionic Exchange in Solid Materials
Three Credits

The course deals with the theory and practice of adsorption in solids materials and ionic exchange. The theoretical topics include the description of the solid surface and the interactions between the surface and the adsorbate, microporous and mesopoporous adsorbents, thermodynamics of adsorption, adsorption in the liquid-solid surface, as well as thermodynamics and kinetics of ionic exchange. Experimental methods in adsorption and ionic exchange in solids are also covered. Measurements of adsorption and ionic exchange isotherms, breakthrough curves, diffusion coefficients in micro porous solids are presented through lectures and experiments.
Requisites: CHEM 463-464

CHEM 881
Experimental Methods in Adsorption and Ionic Exchange in Solid Materials
Three Credits

The course centers on measurement of adsorption isotherms, thermo-programmed desorption, calorimetry of adsorption, and measurement of the diffusion coefficient of molecules in microporous solids. Topics include measurement of ionic exchange isotherms, calorimetry of ionic exchange, and measurement of the diffusion coefficient of cations during ionic exchange. Determination of the breakthrough curves during dynamic adsorption and ion exchange will be presented. Two hours of lecture and two laboratory hours.

Requisite: CHEM 854

CHEM 885
Instrumental Methods for Materials Characterization
Three Credits
The course focuses on methods for characterizing the structure and properties of materials, principally solid materials. The fundamentals of the different techniques existing to identify solids and their importance from the environmental point of view will be discussed. Structure characterization techniques including optical, X-ray and electron microscopy, magnetic resonance and electro-calorimetric methods applied to solids will be covered.

Requisite: CHEM 852

ECON 700
Environmental Economics
Three Credits
The course focuses on analysis and study of the economic principles associated with renewable and non-renewable resource management, pollution, environmental protection and regulations, from a global perspective. The course emphasizes the application of economic principles to the environmental economy.

ENSC 500
Fundamentals of Environmental Sciences
Three Credits
The course is an introduction to the environmental sciences. Structure and function of natural ecosystems, types of environmental contaminants and the effect of contaminants on human health and the environment will be covered.

ENSC 520
Applied Environmental Legislation
Three Credits
The course focuses on the study of laws and regulations established to control activities that affect the quality of the environment and natural resources. It includes analysis of the relationship between government agencies and how laws and regulations are used to establish environmental policy. Emphasis is on sustainable development and its importance for the protection of the environment.

ENSC 530
Solid Waste Management
Three Credits
The course deals with fundamental concepts required for the adequate management of solid waste. It includes discussion of regulations and solutions related to the generation, transportation, storage and disposal of solid waste.

ENSC 540
Aquatic Environment
Three Credits
The course deals with sources of supply, contamination, and disposal of waste. It includes study of physical-chemical characteristics of water, supplies, contamination, disposition of its contaminants, management of rainwater, importance of the environmental laws that regulate aquatic wastes, the local situation, and involvement of public and government agencies.

ENSC 541
Air Pollution and Standards of Quality & Control
Three Credits
The course focuses on principal sources of contamination; topics include nature, transformation, motion, removal and effect of contaminants on public health an natural ecosystems. Quality standards and programs for the control of the contamination will be discussed, as well as the local situation and the importance of laws and regulations that have been established.

ENSC 550
Hazardous Waste Management
Two Credits
The course focuses on selection of parameters and methods for waste characterization and classification. It includes selection of sampling procedures and an introduction to evaluation.

ENSC 563
Environmental Evaluation
Three Credits
The course focuses on the study of the procedures established for the preparation of environmental auditing, assessments and impact statements.

ENSC 582
Seminar I
One Credit
The course consists of presentations and discussion by scientists and researchers on recent topics in environmental sciences. Topics include thesis results, design of new equipment, application of new technology, new efforts and advances of government agencies and private companies, and local and international issues in environmental science. Special guests and faculty members will present topics.

ENSC 600
Environmental Planning and Management
Three Credits
The course deals with theoretical components of the environmental planning processes. Important topics for the

development of an implementation plan and the essential components of a monitoring plan are discussed.

ENSC 610
Hazardous Waste Operations, Emergency Response and Hazard Communication
Three Credits
The course focuses on fundamental concepts required for the development and implementation of a hazard communication program, adequate management of chemical substances and hazardous waste, and management of environmental emergencies.

ENSC 635
Environmental Chemical Analysis I
Three Credits
The course focuses on the theoretical and experimental study of the chemical analyses that are used to characterize inorganic environmental contaminants found in soil, water, and air samples. Analyses will include toxic metals, gases, and cyanide.

ENSC 636
Environmental Chemical Analysis II
Three Credits
The course deals with theoretical and experimental chemical analyses of water, soil, and air samples, in order to characterize environmental contaminants. Analyses will include oxygen demand, chemical and physical properties of water, and organic contaminants such as pesticides, solvents and aromatics.

ENSC 640
Wastewater Treatment
Three Credits
The course focuses on microbiology and characteristics of waste waters, as well as their treatment processes. A brief introduction to the control of activated sludge plants will also be presented.

ENSC 645
Remediation
Three Credits
The course focuses on state-of-the-art treatment technologies applicable to industrial waste and hazardous waste site remediation. Several types of chemical and biological treatments will be discussed. Emphasis will be on those technologies that have proven to substantially diminish the toxicity of hazardous constituents and/or have reduced the likelihood of migration of such constituents from the waste of concern.

ENSC 646
Bioremediation
Three Credits
The course deals with general concepts in bioremediation in soil and aquatic systems. This includes the use of microorganisms and their function and interaction in the environment, phytoremediation, abiotic and biotic parameters that affect the bioremediation processes, anaerobic processes in bioremediation, molecular techniques in bioremediation, and risk assessment.

ENSC 650
Special Topics in Environmental Chemistry
Three Credits
The course focuses on theoretically and practically advanced chemical techniques for environmental analyses. Specific methods to measure organic and inorganic pollutants are discussed, in particular novel methodologies for trace and in situ measurements. The theoretical fundamentals of the techniques are presented, together with the instrumental and applications.

ENSC 665
Industrial Toxicology
Three Credits
The course centers on the study of toxic agents that affect humans. Chemical reactions and their effects on normal physiological activities of the organism will be analyzed.

ENSC 682
Seminar II
One Credit
Students will learn to write proposals about research topics. Topics to be considered are as follows: design of equipment, application of new technology, new efforts and advances of government agencies and private companies, and local and international issues in environmental science. Students will present their analyses.

ENSC 683
Special Topics in Environmental Science
Three Credits
The course will cover special topics in Environmental Science that may become available from time to time, including specific topics in . The format may include traditional classroom study, intensive workshops, and field courses, given by visiting professors or regular faculty. Students will take exams, submit reports and give oral presentations. Content may vary by semester. The specific content of a given semester will be indicated in a subtitle in parenthesis following the title “Special Topics in Environmental Science” in the course calendar (programming) and student transcripts. The student may repeat the course under different subtitles for a total of 9 credits.

ENSC 684
Advanced Master's Level Study in Environmental Science
One to Three Credits
Advanced study in Environmental Science. Content may vary by semester. The student may register for a total of 1-3 credits in any semester. The specific content of a given semester will be indicated in a subtitle in parenthesis following the title "Advanced Master's Level Study in Environmental Science" in the course calendar (programming) and student transcripts. Permission from instructor and approval of the Graduate Program (Assoc Dean) are required before the student may enroll. The student may repeat the course under different subtitles for a total of 9 credits.

ENSC 691
Master's Thesis Research I
One to Three Credits
A supervised independent scientific research project in environmental science, leading to the completion of the master's thesis requirement. The student will enroll for the number of credits determined by the student's Committee and Chair (Research Advisor/Supervising Professor), but not for less than a cumulative total of 6. No more than 3 credits (cumulative total) may be used for preparation of the master's thesis proposal. No more than 3 credits of ENSC 691 may be taken in a regular semester, nor more than 3 in a summer session. Requires permission from the student's Committee and Chair (Research Advisor and Supervising Professor) and approval of the Coordinator for Graduate Studies and Research.

ENSC 692
Master's Thesis Research in Residence (continuation)
One to Three Credits
Used to establish research in residence status for the Master of Science in Environmental Science, after the student has been enrolled for the permissible cumulative total in master's thesis research (ENSC 691). The student will be regarded as in full-time residence (study) as determined by the University. Requires permission of the student's Thesis Committee and Chair (Research Advisor and Supervising Professor) and approval of the Coordinator for Graduate Studies and Research.

ENSC 703
Ecology and Conservation of Natural Resources
Three Credits
The course centers on the study and analysis of topics in ecology and conservation of renewable natural resources, including their multiple uses for timber, water, range, recreation, and wildlife.

ENSC 721
Topics in Biodiversity
Three Credits
Students will explore data and discuss its importance, investigate threats, research issues, review values, and examine solutions in biodiversity and conservation biology. The effects that economics, education, politics, and lifestyle have on biodiversity are also considered.

ENSC 737
Renewable Energy Sources and Issues
Three Credits
The course is an introduction to energy resources and the environmental impacts of their use. Basic energy concepts, global resources, environmental issues and applications will be discussed. The economic and environmental advantages of alternative energy sources vs. traditional sources are discussed.

ENSC 801
Environmental Risk Assessment and Management
Three Credits
Various methodologies for evaluating and managing risks from environmental contaminants and technological hazards will be examined. Topics include basic concepts of environmental risk assessment, risk assessment methods, and risk perception, including characterization and quantification of human health impacts, and evaluating ecological risk. Legislative and regulatory initiatives that are attempting to base decisions on risk assessment, along with the controversy that surrounds such approaches will also be discussed.

Requisites: ENSC 610

ENSC 802
Environmental Quality Indicators
Three Credits
The course deals with the following topics in microbiology: bacteria, algae, fungi, protozoa, viruses, worms, metabolism and growth, pathogens, indicators of fecal contamination, coliforms, streptococci, clostridiums, and coliphages. Other topics include chemical contaminants, acids, ammonium, heavy metals, nitrate, nitrite, fluoride, sulfides, cyanide; selenides, arsenic, asbestos; hydrocarbons, VOC, PAHs, PCBs and dioxins, pesticides, trialomethanes, mercaptans, amines, ethers, aldehydes, soap and detergents, radioactive contaminants, turbidity, pH. Air quality: SO_x, NO_x, CO_x, ozone, lead, VOC, particulate matter, emission survey, ambient air monitoring. Meteorology and contaminant distribution will be discussed. The following will also be discussed: biogeochemical cycling; N, S, P cycling; microbial evolution; soil microbiology, N-cycling; Soil-borne & water-borne

diseases; indicator organisms; C-cycling; K-cycling; air quality and water quality.

Requisites: CHEM 351-352; BIOL 350

ENSC 803
Water Treatment Systems
Three Credits
The course deals with conventional water and wastewater treatment operations, process fundamentals, hydraulic design of water and wastewater treatment operations, mass transfer, mass balance, flow and batch reactors. Other topics to be covered are the following: screening and sedimentation, aeration, coagulation and flocculation, filtration, water softening, disinfections, aerobic biological treatments, anaerobic treatments. Wetlands, ponds, land systems, sludge processing and effluent disposal will also be discussed.

Requisites: CHEM 203-204

ENSC 805
Solid Waste Management
Three Credits
The course deals with basic principles and trends in solid waste management. Physical, chemical and biological methods for solid waste disposal and processing, such as composting, thermal technologies and land filling, are discussed. Emphasis is on the advantages of reduction of waste production. Characterization, storage and transport of solid wastes will be also covered.

Requisites: CHEM 203-204 (May be convalidated with ENSC 530)

ENSC 806
Air Quality Management
Three Credits
The course presents an overview of the field of air quality management, with emphasis on the causes and the effects of air pollution and how it affects the environment, including the effects on humankind, plants and animals. Air pollution meteorology, climatology, chemistry, atmospheric pollutants, air quality, and emissions assessment, control of emissions from stationary sources, prevention and control measures will be emphasized.

ENSC 839
Issues in Environmental Public Health
Three Credits
The course focuses on major concepts and principles relevant to environmental health. Emphasis is on the chemical, biological and physical agents and factors that are environmentally mediated and constitute a risk to humans. Sources, environmental pathways of transmission, exposure dose relationships, adverse health effects are discussed, giving special attention to susceptible populations. The principles and methods of risk assessment and risk management are identified and applied throughout the course as a unifying theme.

Requisite: ENSC 801

ENSC 841
Bioremediation Processes
Three Credits
The course covers biogradation and the bioremediation process in soil, sediments, aquatic systems and air. Emphasis is on metabolic study of the microbiological process to degrade xenobiotic substances and of bio-transformation of inorganic compounds. Interaction of microorganisms with non-biotic factors in soil, water and air will be discussed. Topics include growth-linked associations to acclimatization, activation, detoxification, kinetic thresholds and sorption. Other topics covered include chemical structure and prediction of biodegradation products, and co-metabolism, as well as in-situ and ex-situ bioremediation. Phytoremediation and plants used as bio-indicators, genetic pools, bioengineering and new technologies will also be discussed.

Requisites: Microbiology, Organic Chemistry, Biochemistry

ENSC 844
Environmental Biotechnology
Three Credits
The course focuses on the emerging role of biotechnology in human society and the global environment. Basic concepts in genetic engineering are introduced in a relatively non-technical way as a foundation for studying the implications of biotechnology in agriculture, food, medicine, industry, and ecology. Concepts of microbiology, microbial ecology, and environmental chemistry will be introduced and synthesized to provide an understanding of bioremediation and other areas of environmental biotechnology. Controversial aspects of biotechnology are addressed.

Requisites: BIOL 320, BIOL 350

ENSC 845
Soil Management
Three Credits
The course deals with principal soil properties including genesis, dynamic and development; soil physical and chemistry properties, soil fertility and fertilizers; dynamic role of clay and oxide material; organic material; role and dynamics of the major microorganisms; soil transformation in tropical soils; soil and water conservation; drainage and irrigation; soil pH and salinity; plant nutrition; new techniques for soil sampling and testing; pH and organic amendments; tillage and cropping systems; soil uses; advances in soil classification and survey; techniques for soil

conservation and use in urban development; government agencies and programs; study cases in soil management;

Requisites: CHEM 203-204; CHEM 351-352; CHEM 311

ENSC 860
Biodiversity Conservation and Management
Three Credits
The course deals with conservation of biological diversity "in situ" and "ex situ". Topics discussed include the following: policy, environmental impact and strategies regarding the conservation and management of biological diversity; local and international norms and legislation about the conservation and management of biological diversity; commercialization and economic regulations in the conservation and management of biological diversity; evaluation and solutions of environmental impact and practices in the conservation and management of biological diversity; sustainable work of protected areas; tourist management; science and biotechnology for the conservation and management of biological diversity; education, environmental conservation, spreading and international cooperation from the conservation and management of the biological diversity.

Requisites: ENSC 563, ENSC 600

ENSC 906
Environmental Science Seminar
Three Credits
The course centers on contemporary issues in environmental sciences. The student is expected to review, discuss, and present an oral report on a topic related to contemporary environmental issues. Topic areas for selection include environmental biology, environmental chemistry, environmental microbiology, environmental toxicology, and water quality management, as well as solid and hazardous waste management.

Requisite: Seminar Coordinator authorization

ENSC 907
Special Topics in Environmental Science
Three Credits
The course will cover special topics in environmental science that may become available from time to time. The format may include traditional classroom study, intensive workshops, and field courses, given by visiting professors or regular faculty. Students will take exams, submit reports and give oral presentations. Content may vary by semester. The specific content of a given semester will be indicated in a subtitle in parenthesis following the title "Special Topics in Environmental Science" in the course calendar (programming) and student transcripts. The student may repeat the course under different subtitles for a total of 12 credits.

ENSC 992
Experimental Methods in Bioremediation
Three Credits
The course focuses on application of recent innovative technology in bioremediation. The following topics will be discussed: microbiological treatment of various environments (soil, sediments and water) contaminated with organic and inorganic compounds; microbial nutrition and environmental requirements; microbial destruction of environmental pollutants; the bioremediation laboratory; applied bioremediation; anaerobic biodegradation; surface bioremediation of soils and sludges; bioreactors; aquifer bioremediation; lagoon bioremediation; vadose zone bioremediation, and developing bioremediation technologies. Two hours of lecture and two laboratory hours.

Requisites: BIOL 320, CHEM 351-352, BIOL 350

ENSC 993
Rotation
One credit per rotation for a maximum of three rotations
This is a practical course in which the doctoral student selects a topic related to current research in the School of Science and Technology. With the approval of the advisor research can be done in industry and/or at another local or international university. A minimum of 10 hours per week of research is required. The student will write the results in scientific publication style. This work must be presented orally in the seminar class and the written paper will be submitted to the PhD coordinator.

ENSC 995
Advanced Study in Environmental Science
One to Three Credits
Advanced study in Environmental Science. Content may vary by semester. The student may register for a total of 1-3 credits in any semester. The specific content of a given semester will be expressed in a subtitle in parenthesis following the title "Advanced Doctoral Level Study in Environmental Science" in the course calendar (programming) and student transcripts. Permission from instructor and approval of the Graduate Program (Assoc Dean) are required. The student may repeat the course under different subtitles for a total of 9 credits.

ENSC 997
Doctoral Dissertation Research
One to Six Credits
A supervised independent scientific research project in environmental science, leading to the completion of the doctoral dissertation requirement. The student will enroll for the number of credits determined by the student's Committee and Chair (Research Advisor/Supervising Professor), but not for less than a cumulative total of 15. No

more than 6 credits (cumulative total) may be used for preparation of the dissertation proposal. No more than 6 credits of ENSC 997 may be taken in a regular semester, nor more than 3 in a summer session. Requires permission from the student's Committee and Chair (Research Advisor) and approval of the Coordinator for Graduate Studies and Research.

ENSC 998
Doctoral Research in Residence (continuation)
Cero Credits
Used to establish research in residence status for the Ph.D., after the student has been enrolled for the permissible cumulative total in doctoral dissertation research (ENSC 997). The student may be regarded as in full-time residence (study) as determined by the Dean of Doctoral Studies. Requires permission of the student's Dissertation Committee and Chair (Research Advisor and Supervising Professor) and approval of the Coordinator for Graduate Studies and Research.

ENSC 997-98
Dissertation Research I & II
Six Credits
Proposed student's advisory committee members must approve research. Original research must be carried out on a selected topic in environmental science in the student's chosen specialization. The student must complete a minimum of one year (full time commitment of at least 135 hours per semester) dedicated to research, under the direct supervision of the faculty advisor. Each doctoral student is expected to consult with members of the dissertation committee at frequent intervals throughout the progress of the research, and shall be required to submit a progress report to each committee member at least once each semester. Student must produce, present and defend a document of publication quality. Duration: Two continuous semesters.

Requisites: Advisory Committee Approval

ENVM 690
Special Group Project in Environmental Management
Three Credits
Special Group Project in Environmental Management is an integral part of the total education of the professional student in the Environmental Management program. It is intended to represent the student's major academic focus, and demonstrate the student's competence in that area. Students will work collaboratively in small groups to develop an applied issue environmental management or an applied or basic research problem. Special projects may originate with a faculty member, with students, or in collaboration with partners or sponsors from industry, a government agency or program, or other institution or foundation, and are conducted with guidance and participation of a faculty mentor. Student teams may create budgets, develop timelines, and describe deliverables. Maximum enrollment is seven (7) students per section.

ENVM 695
Internship in Environmental Management
Three Credits
Students participate in an internship suited to the student's career interests in an industry, a government agency or program, or other institution or foundation directly related to his or her area of study. All internships require the approval of the student's academic advisor (internship supervisor) and the School's Office of Graduate Studies and Research, and approval of a written proposal (prepared and prior to the semester of the internship) that documents the justification, goals, objectives, specific activities and expected outcomes of the internship. The internship must last at least one semester and will begin during or after the summer session following the first full year (minimum 24 credits) of coursework. The university will maintain communication and coordination with both the student and the sponsoring employer during the internship. Maximun enrollment is one student per section.

GEOL 607
Environmental Geology
Three Credits
The course focuses on the study of earth history, processes and resources. The relationship between geologic factors, society and environmental pollution are emphasized.

PHIL 700
Environmental Ethics and Public Policy
Three Credits
The course centers on the study and analysis of ethical and public policy principles applied to the environment. The major issues in environmental ethics, such as ecocentric ethic, biocentric ethics, anthropocentric survival ethics, deep ecology, ecofeminism, social ecology and other traditional ethical theories will be discussed, as they relate to environmental policy.

STAT 505
Statistics as a Research Tool
Three Credits
The course focuses on work with statistics software. It includes the following topics: experimental design, sampling, data collection, descriptive analysis, and statistical inference. The student will carry out a small research project in which these concepts and skills will be applied.

STAT 700
Statistical Procedures for Analysis of Environmental Data

Three Credits

The course focuses on the relationship between probability and statistics. It emphasizes the characteristics of environmental quality data, statistical measures and distributions, system changes and outliers, control charts, regression and correlation (simple and multiple), and software applications

Requisite: STAT 505 or its equivalent

STAT 750
Statistics and Experimental Design
Three Credits

The course focuses on hypothesis testing of environmental quality. It covers sampling distribution, hypothesis testing, designed experiments (completely randomized design, randomized complete block design, Latin square design, factorial experiments), parametric and non-parametric analyses, as well as statistical software applications.

Requisite: STAT 700

SCHOOL OF SOCIAL SCIENCES AND COMMUNICATIONS

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Edward H. Fankhanel / Associate Dean for Psychology and Social Work

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PhD, Centro Caribeño de Estudios Postgraduados

Master's Degree In Psychology

The Graduate Program in Psychology is designed to train competent professionals with a solid academic, theoretical and practical preparation, which enables them to qualify for the psychology licensing examination (as established by Law 96 of 1983, as amended, which regulates the practice of psychology in Puerto Rico.)

This program began in 2000 with a specialization in counseling psychology. Counseling psychology is a branch of psychology which focuses primarily on problems of social, educational and vocational adaptation.

Objectives

- Expose students to the principal ethical and professional issues in psychology.
- Demonstrate knowledge of the basic principles of research, including statistical, descriptive and inferential analysis.
- Develop the ability to evaluate and revise the instruments of psychological measurement and of counseling psychology.
- Demonstrate a general knowledge of human development.
- Present the theoretical and ethical fundamentals of counseling for career development particularly in diverse or heterogeneous groups.
- Develop knowledge of the factors which affect personality development.
- Develop knowledge of the physical, emotional, intellectual and emotive context of children ad adolescents.
- Develop the capacity to recognize developmental crises and to diagnose mental disorders.
- Articulate treatment strategies related to counseling psychology.
- Recognize problems of an intercultural nature in counseling and the appropriate techniques to treat them.
- Develop knowledge of the theories and techniques of counseling psychology of addiction.
- Recognize the dynamics of the evolution of the family as an institution and the critical junctures of its development.

Curriculum

The curriculum provides the student with the required knowledge and skills to practice as a psychologist. It consists of 52 credits, which are grouped into three categories: core courses, specialization courses, and electives.

The core courses include 8 three-unit courses which study the topics covered on the licensing examination in psychology in Puerto Rico.

The twenty-five credits in the specialization consist of five courses in counseling psychology and four courses (10 credits, 400 hours) of practice.

In the elective courses, the student chooses three credits in courses which discuss specific areas in counseling psychology, such as: psycho-counseling in cases of drug/alcohol abuse, and cognitive therapy, among others.

MASTER'S DEGREE

Counseling Psychology (MPSY)

The master's degree in psychology, with a specialty in counseling psychology, requires a minimum of 52 graduate hours, distributed in the following manner:

Total Credits	**51**
Core Courses	**28**
Specialization Courses	**17**
Elective Courses	**6**

Core Courses		**(28 credits)**
PSYC 500	Human Growth and Lifespan Development	3
PSYC 501	Social Basis of Behavior	3
PSYC 506	Research Methods and Statistics	3
PSYC 503	Theories of Personality	3
PSYC 504	Psychopathology	3
PSCY 505	Cognitive Assessment and Measurement	4
PSCY 510	Motivation and Learning	3
PSYC 520	Biological Basis of Behavior	3
PSYC 508	Test Constructions: Theory and Application	3

Specialization Courses		**(17 credits)**
CPSY 601	Foundations and Techniques in Counseling Psychology	3
CPSY 602	Counseling Models and Techniques	3
PSYC 550	Practicum I	2
PSYC 551	Practicum II	3
PSYC 575	Practicum III	3
PSYC 600	Practicum IV	3

Elective Courses		**(6 credits)**
CPSY 607	Counseling Psychology: a Reflective Practice	3
CPSY 615	Cognitive Therapy	3

CPSY 620	Psychological Counseling for Drug and Alcohol Abusers	3
CPSY 612	Sexual Counseling and Therapy	3
CPSY 625	Sexual Assault Counseling	3
CPSY 630	Career and Occupational Counseling	3
CPSY 700	Atypical Sexual Behaviors	3
CPSY 603	Systemic Counseling	3
CPSY 605	Psychological Interventions with Children and Adolescents	3
CPSY 728	Psychological interventions with people LGBTT	3

Scholar Psychology (MPSY)

Total Credits	**60**
Core Courses	**28**
Specialization Courses	**18**
Practicum	**11**
Elective Courses	**3**

Core Courses		**(27 credits)**
PSYC 500	Human Growth and Lifespan Development	3
PSYC 501	Social Basis of Behavior	3
PSYC 503	Theories of Personality	3
PSYC 504	Psychopathology	3
PSCY 505	Cognitive Assessment and Measurement	4
PSCY 510	Motivation and Learning	3
PSYC 520	Biological Basis of Behavior	3
PSYC 508	Test Construction: Theory and Application	3

Specialization Courses		**(18 credits)**
SPSY 600	Psychological Services in Educational Scenes	3
SPSY 602	Ethical and Legal Subjects of Scholastic Services	2
SPSY 604	Psychoeducational Diagnosis of Exceptional Persons	4
SPSY 608	Modification of Conduct I: Principles and Procedures	2
SPSY 609	Modification of Conduct II: Handling and Solution of Problems of Discipline in Schools	2
SPSY 613	Mediation of Conflicts and Prevention of Violence in Schools	3
SPSY 650	Seminar	2

Practicum		**(11 credits)**
PSYC 550	Practicum I	2
PSYC 551	Practicum II	3
PSYC 575*	Practicum III	3
PSYC 600*	Practicum IV	3

*One full semester course.

Elective Courses		**(3 credits)**
CPSY 601	Foundations and Techniques in Counseling Psychology	3
CPSY 630	Career and Occupational Counseling	3
EDUC 530	Special Education	3

Graduate Program in Public Affairs

The ***Graduate Program in Public Affairs*** is committed to an efficient rendering of services by private and public institutions.

This program began in 1990 in response to an existing need to train professionals to assume a multiplicity of roles such as analysts, evaluators and planners in the public administration field as well as in the administration of human services in both the public and private sectors.

The academic and professional orientation of the program enables the students to analyze the doctrines and principles of public administration which are involved in the implementation and evaluation of public policy.

Because the program prepares students for positions of high responsibility in the field of public affairs, the seminars and field projects emphasize application of concepts and analytical tools to the real problems of our present-day society.

It also focuses on the political, economic and organizational aspects of developing, implementing and evaluating public policy.

Students who are presently in the program are working in various government agencies and in private corporations.

The program has several distinct characteristics:

- A core curriculum in public affairs (public administration), with specializations in:
  - ✓ Criminal Justice
  - ✓ Human Service Administration
  - ✓ Art Administration
  - ✓ Forensic Sciences
  - ✓ Conflict Mediation
- A close student-faculty interaction.
- A student body which comes from various public and private agencies.
- A distinguished faculty which has practical experience in public administration.

Objectives

The primary objective of the program is to:

1. Offer students the professional tools to meet the challenges of public administration.
2. Develop competent professionals with effective leadership in the implementation of programs and services in Puerto Rico.
3. Upgrade the professional preparation of administrative personnel in public and private agencies, enabling them to explore and utilize effective strategies in the decision-making process.

Curriculum

The curriculum is interdisciplinary, focusing on analysis of administrative processes, decision-making and the organization of public and private institutions at the local, national and the international levels.

It provides students with a solid education, which will enable them to plan, design and evaluate programs and services in the public administration field and particularly in the areas of criminal justice, human services, conflict mediation, and the arts. It fosters broad and programmatic responsibility and leadership.

The master's degree in Public Affairs will normally require the completion of a minimum of 39 – 42 semester hours of approved graduate study. In addition to credit-hour requirements, students must develop a basic familiarity with computers, submit a research paper while registered in the research seminar course, pass a comprehensive examination, and have maintained a grade point average greater than 3.00.

This study is to be undertaken in two phases, the public administration core and a selected area of specialization. Students will take the core courses during their first year. These core courses provide students with fundamental knowledge on public policy and organization theory as well as with the theoretical and conceptual basis for the study of public administration. The courses in research methods, quantitative methods and the research seminar provide the student with the tools needed to carry out research in the area of specialization.

The public affairs core consists of 7 courses (21 semester hours). Students must also complete the requirements of one of the following specializations, thus permitting the development of expertise in a particular field of academic and professional interest.

1. **Human Services Administration**
   This specialization consists of an intensive review of fundamental problems in the development and administration of human services programs.

2. **Arts Administration**
   The specialty in arts administration is designed for students interested in arts management, marketing, and planning, and students who have an interest in artistic organizations (such as museums and theatres). Emphasis is on analysis of cultural policy and public and private subsidy of the arts. Students will be expected to complete a research seminar in arts administration or an internship at on approved practice center.

3. **Criminal Justice**
   This specialization prepares students to function effectively in administrative roles within the criminal justice system. The program prepares the student to understand the nature and methods of effective leadership, and to be able to identify problems and institute procedures for studying and solving them.

4. **Forensic Sciences**
   The specialization in forensic sciences is designed to prepare professionals in criminal investigation techniques to identify and analyze the physical evidence located at the crime scene.

5. **Conflict Mediation**
   Graduates from the specialty in Conflict Mediation are prepared to work as neutral interveners or mediators in family and labor conflicts in administrative and judicial procedures. Students will develop attitudinal, cognitive and aptitudinal skills to facilitate obtaining agreement of parties in conflict.

   Students will develop skills needed to conduct conflict resolution in an ethical and confidential process, so as to assist parties in talking about their disagreements.

   Students will be qualified to encourage face-to-face dialogue, discuss concerns and issues, build understanding, and search for win/win solutions.

Public Affairs: Criminal Justice

The master's degree in public affairs, with a specialty in criminal justice, requires a minimum of 39 graduate hours, distributed in the following manner:

Total Credits	**39**
Core Courses	**21**
Specialization Courses	**15**
Elective Courses	**3**

Core Courses		**(21 credits)**
MSPA 500	Theory, Practice and Change in the Administration of Public Policy	3
MSPA 505	Computer Education for Public Administrators	3
MSPA 510	Research and Quantitative Methods in Public Administration	3
MSPA 520	Administrative Law and Ethics	3
MSPA 530	Planning and Evaluation: Theories, Methods, and Techniques	3
MSPA 540	Seminar: Planning, Development and Evaluation of Human Resources	3
MSPA 550	Fiscal Resources Management	3

Specialization Courses		**(15 credits)**
CRJU 500	Foundations, Practice and Changes in the Administration of the Criminal Justice System	3
CRJU 520	Philosophy of Punishment	3
CRJU 565	Seminar: Program Design and Evaluation in the Criminal Justice System	3
CRJU 715	Seminar: Special Situations in the Administration of Correctional Programs	3
MSPA 710	Research Seminar	3
	or	
MSPA 720	Internship or Practice	3

Electives		**(3 credits)**
CRJU 505	Fundamental Principles of Law	3
CRJU 510	Law and Society	3
CRJU 540	The Police and Juridical Changes	3
CRJU 575	Rehabilitation and Delinquent Treatment Programs	3
CRJU 600	Seminar: Crime, Victims and Society	3
CRJU 630	Organization and Administrative Techniques of the Police System	3
CRJU 635	Mental Health and the Law	3
CRJU 640	Addiction: Legal and Psycho-Social Aspects	3
CRJU 645	Comparative Correctional Systems	3
CRJU 650	Special Laws in Criminal Justice Administration	3
CRJU 730	Criminality, Crime Control and Criminal Justice	3

Public Affairs: Human Services Administration

The master's degree in public affairs with a specialty in human services administration requires a minimum of 39 graduate hours, distributed in the following manner:

Required Core Courses	**21**
Specialization Courses	**15**
Elective Courses	**3**

Core Courses		**(21 credits)**
MSPA 500	Theory, Practice and Change in the Administration of Public Policy	3
MSPA 505	Computer Education for Public Administrators	3
MSPA 510	Research & Quantitative Methods in Public Administration	3
MSPA 520	Administrative Law and Ethics	3
MSPA 530	Planning and Evaluation: Theories, Methods and Techniques	3
MSPA 540	Seminar: Planning, Development and Evaluation of Human Resources	3
MSPA 550	Fiscal Resources Management	3

Specialization Courses		**(15 credits)**
MHSA 604	Human Services Administration: Organizations, Policies and Alternatives	3
MHSA 608	Leadership and Community Development	3
MHSA 612	Seminar: Program Design in Human Services	3
MHSA 622	Grant-Writing and Fundraising	3
MSPA 710	Research Seminar	3
	or	
MSPA 720	Internship or Practice	3

Elective Courses		**(3 credits)**
MHSA 652	Seminar: Contemporary Issues in Human Services Management	3
MHSA 654	Legal Aspects in Human Services Administration	3
MHSA 656	Grants Management	3
MHSA 658	Intergovernmental Relations	3
MHSA 668	Seminar: Human Behavior in Organizations	3
MHSA 672	Labor Law	3
MHSA 674	Human Development	3
MHSA 676	Total Quality Management in Human Services Organizations	3

Public Affairs: Arts Administration

The master's degree in public affairs with a specialization in arts administration requires a minimum of 39 graduate hours, distributed in the following manner:

Total Credits	**39**
Core Courses	**21**
Specialty Courses	**15**
Elective Courses	**3**

Core Courses		**(21 credits)**
MSPA 500	Theory, Practice and Change in the Administration of Public Policy	3
MSPA 505	Computer Education for Public Administration	3
MSPA 510	Research and Quantitative Methods in Public Administration	3
MSPA 520	Administrative Law and Ethics	3
MSPA 530	Planning and Evaluation: Theories, Methods and Techniques	3
MSPA 540	Seminar: Planning, Development and Evaluation of Human Resources	3
MSPA 550	Fiscal Resources Management	3

Specialty Courses		**(15 credits)**
MSAA 701	Basics Fundamentals of Art Administration	3
MSAA 703	Arts Marketing	3
MSAA 707	Grant-Writing and Fundraising for the Arts	3
MSAA 709	Administration in Representational Arts	3
MSPA 710	Research Seminar	3
MSPA 720	Internship or Practice	

Elective Courses		**(3 credits)**
MSAA 708	Museology	3
MSAA 710	Museum and Visual Arts Center Administration	3
MSAA 725	Seminar: Special Themes in Arts Administration	3

Public Affairs: Forensic Sciences

The master's degree in public administration with a specialization in forensic sciences requires a minimum of 42 graduate hours, distributed in the following manner:

Total Credits	**42**
Core Courses	**21**
Specialization Courses	**18**
Elective Courses	**3**

Core Courses		**(21 credits)**
MSPA 500	Theory, Practice and Change in the Administration of Public Policy	3
MSPA 505	Computer Education for Public Administration	3
MSPA 510	Research and Quantitative Methods in Public Administration	3
MSPA 520	Administrative Law and Ethics	3
MSPA 530	Planning and Evaluation: Theories, Methods and Techniques	3
MSPA 540	Seminar: Planning, Development, and Evaluation of Human Resources	3
MSPA 550	Fiscal Resources Management	3

Specialization Courses		**(18 credits)**
FORS 730	Forensic Investigation and Identification Techniques	3
FORS 735	Investigation and Gathering Evidence at Crime Scene	3
FORS 740	Forensic Photography and Drawing	3
FORS 745	Expert Witness in Court	3
FORS 750	Examination of Questioned Documents	3
MSPA 710	Research Seminar	3
MSPA 720	Internship or Practice	3

Electives		**(3 credits)**
FORS 760	Forensic Psychology	3
FORS 761	Forensic Chemistry	3
CRJU 600	Crime, Victims and Society	3
CRJU 630	Organizational and Administrative Techniques of the Police	3
CRJU 635	Mental Health and the Law	3
CRJU 640	Addiction Problems: Legal and Psycho-Social Aspects	3
CRJU 645	Comparative Correctional Systems	3
CRJU 715	Seminar: Special Situations in the Administration of Correctional Programs	3
FORS 762	Cellular and Molecular Biology applied to Forensic Sciences	3
FORS 763	Techniques on Handling Samples	3

Public Affairs: Conflict Mediation

The specialty in Conflict Mediation has 41 credits, a Comprehensive Exam and Supervised Practice. Graduates of this Program are prepared to work as neutral interveners or mediators in family and labor conflicts in administrative and judicial procedures. Students will develop attitudinal, cognitive and aptitudinal skills to facilitate obtaining agreement of parties in conflict.

Students will develop skills needed to conduct conflict resolution in an ethical and confidential process, so as to assist parties in talking about their disagreements.

Conflict mediation is a confidential and voluntary process that aims to reach win/win solutions for people who are in conflict with one another.

Students will be qualified to encourage face-to-face dialogue, discuss concerns and issues, build understanding, and search for win/win solutions.

Total Credits		**41**
Core Courses		**21**
Specialization Courses		**17**
Elective Courses		**3**

Core Courses		**(21 credits)**
CRJU 510	Law and Society	3
MSPA 500	Theory, Practice and Change in the Administration of Public Policy	3
MSPA 510	Research and Quantitative Methods in Public Administration	3
MSPA 520	Administrative Law and Ethics	3
MSPA 530	Planning and Evaluation: Theories, Methods and Techniques	3
MSPA 540	Seminar: Planning, Development and Evaluation of Human Resources	3
MSPA 550	Fiscal Resources Management	3

Specialization Courses		**(17 credits)**
CMED 600	Alternate Methods in Conflict Resolution: Fundamentals, theories and Principles in Public Affairs	4
CMED 610	Judicial System of Puerto Rico and Alternate Methods of Conflicts Resolution	3
CMED 620	Mediation: Legal and Psychosocial Aspects Related to Violence in the Family	3
CMED 640	Applied Mediation to Labor Cases	3
CMED 660	Practice: Strategies and Techniques Applied to Public Affairs	4

Elective Course-Select one		**(3 credits)**
SPSY 613	The Mediation of Conflicts and Prevention of Violence in the Schools	3
CRJU 635	Mental Health and Law	3
MHSA 672	Labor Law	3

Forensic Social Work

The Forensic Social Work is a specialized practice that focuses on the interrelationship of legal and system social services for disputes to be resolved in court. This specialization provides us the tools for an objective and scientific practice.

Total Credits		**48**
Core Courses		**12**
Specialization Courses		**36**

Core Courses		**(12 credits)**
SOWO 500	Human Behavior and Social Environment	3
SOWO 504	Social Policy and Social Welfare Services	3
SOWO 505	Research in Social Work	3
SOWO 506	Analysis of social reality, Oppression and Social Justice	3

Specialization Courses		**(36 credits)**
FSWO 600	Fundamentals of Forensic Social Work	3
FSWO 605	Theoretical Frameworks in Forensic Social Work	3
FSWO 610	Ethical and Legal Aspects and Jurisprudence in Forensic Social Work	3
FSWO 612	Forensic Evaluation	3
FSWO 625	Expert Report and Testimonial Expertise	3
FSWO 630	Application of Diagnostic Criteria of Mental Disorders	3
FSWO 635	Forensic Focus on Substance Abuse	3
FSWO 642	Psychosocial and Legal Aspects of Violence in the Family	3
FSWO 640	Practicum I Seminar: Establishment of the Professional Relationship	3
FSWO 650	Practicum I: Forensic Social Work Practice	3
FSWO 641	Practicum II Seminar: Application of Methodology and Theoretical Frameworks in Forensic Social Assessment	3
FSWO 660	Practicum II: Forensic Social Work Practice	3

Graduate Certificate in General Public Affairs

Total Credits		**18**
(Select from this group)		
MSPA 500	Theory, Practice and Change in the Administration of Public Policy	3
MSPA 505	Computer Education for Public Administrators	3
MSPA 510	Research & Quantitative Methods in Public Administration	3
MSPA 520	Administrative Law and Ethics	3

MSPA 530	Planning and Evaluation: Theories, Methods and Techniques	3
MSPA 540	Seminar: Planning, Development and Evaluation of Human Resources	3
MSPA 550	Fiscal Resources Management	3

Graduate Certificate in Human Services

Total Credits **18**

(Select from this group)

MHSA 604	Human Services Administration: Organizations, Policies and Alternatives	3
MHSA 608	Leadership and Community Development	3
MHSA 612	Seminar: Program Design in Human Services	3
MHSA 622	Grant-Writing and Fundraising	3
MSPA 710	Research Seminar	3
MHSA 652	Seminar: Contemporary Issues in Human Services Management	3
MSHA 653	Fundamentals of Counseling	3
MHSA 654	Legal Aspects in Human Services Administration	3
MHSA 655	Counseling Techniques	3
MHSA 656	Grants Management	3
MHSA 658	Intergovernmental Relations	3
MHSA 668	Seminar: Human Behavior in Organizations	3
MHSA 672	Labor Law	3
MHSA 674	Human Development	3
MHSA 676	Total Quality Management in Human Services Organizations	3

Graduate Certificate in Criminal Justice

Total Credits **18**

(Select from this group)

CRJU 500	Foundations, Practice and Changes in the Administration of the Criminal Justice System	3
CRJU 505	Fundamental Principles of Law	3
CRJU 510	Law and Society	3
CRJU 520	Philosophy of Punishment	3
CRJU 540	The Police and Juridical Changes	3
CRJU 565	Seminar: Program Design and Evaluation in the Criminal Justice System	3
CRJU 575	Rehabilitation and Delinquent Treatment Programs	3
CRJU 600	Seminar: Crime, Victims and Society	3
CRJU 630	Organization and Administrative Techniques of the Police System	3
CRJU 635	Mental Health and the Law	3
CRJU 640	Addiction: Legal and Psycho-Social Aspects	3
CRJU 645	Comparative Correctional Systems	3
CRJU 650	Special Laws in Criminal Justice Administration	3
CRJU 715	Seminar: Special Situations in the Administration of Correctional Programs	3
CRJU 730	Criminality, Crime Control and Criminal Justice	3

Graduate Certificate in Arts Administration

Total Credits **18**

(Select from this group)

MSAA 701	Basics Fundamentals of Art Administration	3
MSAA 703	Arts Marketing	3
MSAA 707	Grant-Writing and Fundraising for the Arts	3
MSAA 708	Museology	3
MSAA 709	Administration in Representational Arts	3
MSAA 710	Museum and Visual Arts Center Administration	3
MSPA 710	Research Seminar	3
MSPA 720	Internship or Practice	

Graduate Certificate in Forensic Sciences

Total Credits **21**

Core Courses **(18 credits)**

FORS 730	Forensic Investigation and Identification Techniques	3
FORS 735	Investigation and Gathering Evidence at Crime Scene	3
FORS 740	Forensic Photography and Drawing	3
FORS 745	Expert Witness in Court	3
FORS 750	Examination of Questioned Documents	3
MSPA 710	Research Seminar	3

Electives **(3 credits)**

FORS 760	Forensic Psychology	3
FORS 761	Forensic Chemistry	3
CRJU 600	Crime, Victims and Society	3
CRJU 630	Organizational and Administrative Techniques of the Police	3
CRJU 635	Mental Health and the Law	3
CRJU 640	Addiction Problems: Legal and Psycho-Social Aspects	3
CRJU 645	Comparative Correctional Systems	3
CRJU 715	Seminar: Special Situations in the Administration of Correctional Programs	3

Graduate Certificate in Forensic Psychology

Students will have the option to train in civil and criminal areas, and in both Puerto Rico and Federal rules, procedures and case law. Upon completion of the three or four course sequence (11-14 credits), the student will be awarded a certificate of proficiency, which will identify specialized knowledge and supervised practice in the field of Forensic Psychology. The certification in Forensic Psychology will meet specialty requirements established by the Puerto Rico Licensing Board for Psychologists.

Total Credits		**11-14**

Criminal Track		**(11 credits)**
FPSY 880	Psychology and Law: Criminal	3
FPSY 889	Forensic Mental Health Assessment	4
FPSY 891	Psychology and Law: Expert Testimony	4

Civil Track		**(11 credits)**
FPSY 886	Psychology and Law: Civil	3
FPSY 889	Forensic Mental Health Assessment	4
FPSY 891	Psychology and Law: Expert Testimony	4

Criminal and Civil Track		**(14 credits)**
FPSY 880	Psychology and Law: Criminal	3
FPSY 886	Psychology and Law: Civil	3
FPSY 889	Forensic Mental Health Assessment	4
FPSY 891	Psychology and Law: Expert Testimony	4

DOCTORAL DEGREE

COUNSELING PSYCHOLOGY

The Doctoral degree in Counseling Psychology will facilitate the management of personal and interpersonal functioning across the life span with a focus on emotional, social, and vocational aspects. As health services providers, counseling psychologists focus on typical, as well as atypical or dysfunctional development as it applies to humans as individuals, families, groups, and systems. Through the integration of theory, research and practice candidates will learn different techniques to help people improve their well-being, alleviate distress and maladjustment, resolve crisis, and increase their ability to live more highly functioning lives.

The doctoral program in Counseling Psychology, responding to the Institutional mission and goals, will:

- Stimulate pure and applied research, which will result in the improvement of services to the institution and the community, while at the same time maintaining the emphasis on quality learning and teaching.
- Promote ethical and cultural values, to enable students to make better use of their judgment, rights, and obligations.
- Promote the uses of technology and non-traditional delivery systems.
- Establish collaborative relationships between the University and the external community, by promoting research and cultural and community service projects that will enhance the quality of life.

Total Credits		**50**
Core Courses		**17**
Specialization Courses		**13**
Evaluation Courses		**6**
Elective Courses		**6**
Dissertation		**2**
Internship		**6**

Core Courses		**(17 credits)**
PSYC 800	Ethics and Professional Standards	2
PSYC 806	History and Systems in Psychology	3
PSYC 810	Advanced Psychopathology	3
PSYC 820	Objective Personality Assessment	3
PSYC 840	Diversity: Culture, Ethnicity, Gender and Racial	3
PSYC 815	Cognitive and Affective Bases of Behavior	3

Specialization		**(13) credits**
CPSY 805	Professional Issues in Counseling Psychology	1
CPSY 832	Evidence Based Practices in Individual Counseling	3
CPSY 833	Advanced Group Counseling	3
OR		
CPSY 834	Marriage and Family Counseling	3
CPSY 835*	Doctoral Practicum I: Advanced Case Conceptualization and Treatment Planning	3
CPSY 900*	Advanced Doctoral Practicum II	3

Evaluation		**(6 credits)**
PSYC 930	Qualitative and Quantitative Methods and Statistical Design	3
PSYC 938	Consultation and Supervision	3

Elective Courses		**(6 credits)**
PSYC 725	Neuropsychological Assessment	3
PSYC 805	Psychopharmacology	2
PSYC 936	Program Evaluation Methods	2
PSYC 843	Family Violence	3
CPSY 738	Sexual Counseling and Therapy	3
CPSY 620	Psychological Counseling for Drug and Alcohol Abusers	3
CPSY 625	Sexual Assault Counseling	3
CPSY 630	Career and Occupational Counseling	3
CPSY 700	Atypical Sexual Behaviors	3
CPSY 710	Atypical Sexual Behaviors	3
CPSY 715	Eriksonian Hypnotherapy	3
CPSY 728	Psychological intervention with LGBTT Individual	3
CPSY 841	Counseling in Community Settings	3
CPSY 905*	Advanced Doctoral Practice III	

Dissertation		**(2 credits)**
CPSY957*,958*	Doctoral Project I, II	2

Internship		**(6 credits)**
CPSY 960	Internship in Counseling Psychology (2,000 hours)	6

*Semester courses.

* All courses and the candidacy exam must be approved before internship enrollment, including a master level practicum. The internship is a one academic year experience.

COURSE DESCRIPTIONS

CMED 600
Alternate Methods in Conflict Resolution: fundamentals, theories and principles in Public Affairs
Four Credits
The course focuses on an analysis and discussion of the fundamentals, theories and principles that guide Mediation as an alternate method for conflict resolution. It includes an analysis of the mediator authority in conflicts resolution and the ethical dilemmas that guide professional behavior without prejudice.

CMED 610
Judicial System of Puerto Rico and Alternate Methods of Conflicts Resolution
Three Credits
The course consists of an analysis of the organizational structure of the Judicial System of Puerto Rico, functions and procedures pursued in referral cases by the courts, as well as alternate methods of conflict resolutions. The study of legal terminology is also included.

CMED 620
Mediation: Legal and Psychosocial Aspects Related to Violence in the Family
Three Credits
The course centers on an analysis of principles, procedures and negotiation of Mediation in family cases. It includes analysis of causes and manifestations in violence. An analysis of gender violence and other aspects related to violence in the family is also included.

CMED 640
Applied Mediation to Labor Cases
Three Credits
The course provides an analysis of theoretical and practical aspects related to the mediation process in labor relations. Emphasis is on collective bargaining, illegal practices, and procedures for claims and grievances.

Requisite: CMED 600

CMED 660
Practice: Strategies and Techniques Applied to Public Affairs
Four Credits
The course deals with the practical application of knowledge, skills and abilities of Mediation as an alternate method of conflict resolution.

Requisite: CMED 600

CPSY 601
Foundations and Techniques in Counseling Psychology
Three Credits
The course focuses on the historical development of counseling psychology in Puerto Rico. The student will become familiar with the principal theories used in the practice of counseling psychology. Ethical principles of the psychologist's code of conduct and related issues in the practice of counseling psychology will be discussed.

CPSY 602
Techniques and Models of Counseling Psychology
Three Credits
This course provide the link and application of the theoretical models to the Counseling Psychology practice.

Requisite: CPSY 601

CPSY 603
Systemic Counseling Psychology
Three Credits
The course centers on presenting basic knowledge about group processes. Different theoretical approaches will be studied. In the same vein, ethical and professional issues related to group dynamics will be analyzed and discussed.

Requisite: CPSY 601

CPSY 605
Counseling Psychology of Children and Adolescents
Three Credits
The course deals with the principal psychopathological disorders and therapeutic techniques in the treatment of children and adolescents. Due to its importance in contemporary society, a portion of the course will focus on child abuse.

Requisites: PSYC 500, PSYC 504, CPSY 601

CPSY 607
Counseling Psychology: A Reflective Practice
Three Credits
The course is centered on theoretical perspectives and technical tools of the helping relationship. From the reflective practice viewpoint, students will become familiar

with ethical and professional implications affecting the practice of counseling.

Requisites: PSYC 501, PSYC 503, PSYC 504, CPSY 601

CPSY 610
Special Issues in Counseling Psychology
Three Credits
The course deals with analysis and discussion of pertinent topics related to the foundations and practice of counseling psychology.

CPSY 615
Cognitive Therapy
Three Credits
The course focuses on principles of cognitive therapy and their applications in counseling psychology.

Requisites: PSYC 504, PSYC 510, CPSY 601

CPSY 612
Sexual Counseling
Three Credits
This course will present the basic concepts of human sexual conduct, including the history of sexuality, the human sexual response and sexual dysfunctions as stated in the DSM-IV TR. In addition, the basic sexual therapeutic interventions for such dysfunctions, and sexual counseling of different groups will be presented.

CPSY 620
Psychological Counseling in Cases of Drug and Alcohol Abuse
Three Credits
The course will study and analyze different counseling theories and techniques used in the treatment of alcohol and drug abuse.

Requisites: PSYC 501, PSYC 503, PSYC 504, CPSY 601

CPSY 625
Sexual Assault Counseling
Three Credits
The course focuses on the study of the dynamics of sexual abuse, sexual assault and sexual harassment. It includes an introduction to the psychological counseling techniques for the treatment of children or adult victims of sexual abuse, sexual assault, or sexual harassment.

CPSY 630
Counseling Psychology for Careers and Occupations
Three Credits
Theory and practice previously acquired will be applied to different settings. Students will be exposed to numerous career counseling theories, techniques and concepts of life planning, as well as guidelines for implementing and evaluating career counseling through lifespan programs.

Requisites: PSYC 501, PSYC 503, PSYC 504, CPSY 601

CPSY 700
Atypical Sexual Behaviors: Etiologies and Treatments
Three Credits
Analysis of atypical human sexual behaviors: etiologies and treatment modalities. Etiology and therapeutic treatment and management of sexual offenders.

Requisites: PSYC 500, PSYC 504, CPSY 601, PSYC 550, PSYC 551, PSYC 757

CPSY 710
Animals as Co-therapists in Health Care Settings
Three Credits
The course focuses on the study of the relationships and interactions produced between humans and animals/pets. Topics include the benefits these relationships on mental, physical and emotional well-being, as well as the history and development of this field within an interdisciplinary approach. Students will also study scientific research, models, conceptual frameworks and theories in order to broaden their knowledge. They will also review the skills used in the modality known as Animal Assisted Therapy.

CPSY 728
Psychological interventions with people LGBTT
Three Credits
This course provides an extensive view of the lesbian, gay, bisexual and transgendered (LGBTT) sexual orientations; emphasis is given in sexual identity development models as well as specific psychological needs of these persons. Critical analysis about assessments and evidence based psychotherapy interventions. Additionally, it will allow the student to become sensitive to the LGBTT lifestyle.

CPSY 738
Sexual Counseling and Therapy
Three Credits
This course will present the basic concepts of human sexual behavior: the history of sexuality, the human sexual response and sexual dysfunctions as stated in the DSM. In addition, it will present the basic sexual therapeutic interventions for such dysfunctions as well as sexual counseling.

Requisites: PSYC 500, PSYC 503, PSYC 504, PSYC 550, PSYC 551

CPSY 805
Professional Issues in Counseling Psychology
One Credit
The course presents a critical revision of the history of Counseling Psychology and its relationship with other

helping professions. It includes an analysis of issues related to professional practice, licensing, certification, responsibility, roles, and identity of the psychological counselor. Organizations and professional journals will also be examined.

CPSY 825
Diagnosis and Treatment Planning in Counseling
Three Credits
This course discusses the specific steps for developing an effective treatment plan based on assessment data and the recognition of the uniqueness of each client. Treatment plans will include a variety of interventions and approaches based on both behavioral problems and/or DSM IV (RT) diagnosis.

CPSY 832
Advanced Individual Counseling
Three Credits
This course provides an advanced examination of individual counseling. Classic models of counseling are explored and their appropriateness in various case studies are evaluated. Concepts and techniques from major therapeutic approaches are explored.

Requisite: PSYC 800, 810

CPSY 833
Advanced Group Counseling
Two Credits
This course will provide the students with the intensive knowledge, the relevant references and the development of skills in group psychological counseling. Emphasis will be placed on the area of group's types, group dynamics, group psychotherapy (groups with mental conditions, among others) norms in group process, leadership styles, leaders and co-leaders and treatment plan. Confidentiality, selection procedures, ethics, and multicultural diversity are considered.

Requisite; PSYC 832

CPSY 834
Marriage and Family Counseling
Two Credits
This course presents the foundations of marital and family counseling. The students will study the emergence and the tenets of the major theoretical constructs in marriage and family therapy, including psychoanalytic, behavioral, experiential, strategic and structural models. The specific therapeutic interventions derived from these models are evaluated.

Requisite: PSYC 833

CPSY 835
Advanced Practicum in Counseling Psychology
Three Credits
The course is a comprehensive experience in which students under supervision see clients for individual, group, family counseling, and psychotherapy.

Requisites: PSYC 825, PSYC 833, PSYC 834.

CPSY 841
Counseling in Community Settings
Three Credits
This course presents early intervention therapeutic models in community settings. The focus of the course is on psychoeducational and interpersonal communication, decision-making, and developmental models. A perspective on prevention is also studied.

CPSY 900
Advanced Doctoral Practice II
Three Credits
This advanced doctoral practicum allows students to be placed in a community site to gain additional clinical experience. They will also have weekly didactic session where they will be exposed to advanced concepts of Evidence Based Practice (EBP) and Empirically Validated Treatments (EVT) in psychology. Student will have the opportunity to discuss cases among them in group supervision and will benefit of weekly individual supervision as well. It is expected that students integrate different sources of information on EBP and EBT to psychological assessments as well as in their individual counseling and psychotherapy sessions. 250 hours of practice.

Requisites: CPSY 835

Co-requisite: Doctoral Project I

CPSY 905
Advanced Doctoral Practice III
Three Credits
This advanced elective doctoral practicum allows students, who want additional hours of practicum, to continue to enhance their clinical skills and competencies following the same description of CPSY 900. 250 hours of practice

Requisite: CPSY 900

CPSY 955
Dissertation I — Counseling
Two Credits
The first of two required blocks of dissertation writing is designed to produce an approved proposal. The review of the literature will be the major component of Chapter 1 of this proposal, and methodology will be the major component of Chapter 2. (See Dissertation Manual)

CPSY 956
Dissertation II — Counseling
Two Credits
The second dissertation block is designed to produce a completed dissertation which includes the results of Chapter 3, the conclusions of Chapter 4, any editing to previous chapter work, and the successful oral defense of the entire dissertation before the committee. (See Dissertation Manual)

CPSY 957
Dissertation Extension – Counseling
Students unable to complete any of the dissertation blocks in the stipulated time may register for an extension under this course number. (See Dissertation Manual)

CPSY 958
Doctoral Project II
One Credit
This is a continuation of Doctoral Project I. The student will integrate and apply the scientific literature review and its application to a specific problem in the clinical practice of counseling psychology. The student must demonstrate the knowledge and skill necessary to integrate science in to the practice of counseling psychology. An oral defense on the project is required.

Co-requisite: Advance Doctoral Practice I or II

CPSY 960
Internship in Counseling Psychology
Six Credits
As a requirement for all doctoral candidates in counseling psychology, students must complete a minimum of 2,000 service hours (one academic year) in an approved counseling clinic, private or public, under the supervision of a certified psychologist. (See Internship Manual)

CRJU 500
Foundations, Practices and Changes in the Administration of the Criminal Justice System
Three Credits
The course deals with theoretical, judicial and practical principles inherent in the criminal justice system in Puerto Rico. Students will be involved in problem-solving situations, which will permit them to analyze, evaluate, and propose alternative solutions to practical administrative problems.

Requisite: MSPA 500

CRJU 505
Basic Legal Principles in Criminal Justice
Three Credits
The course covers constitutional rights, with an emphasis on civil rights, penal rights, and criminal procedures in Puerto Rico. It will also include the sources of positive rights, the Constitution and jurisprudential decisions.

CRJU 510
Law and Society
Three Credits
The course deals with the relationship between law and society. It centers on a theoretical and investigative vision of our legal system and procedural and substantive aspects of the legislative process. A discussion of the influence of social factors in the approval process of the law, vis-a-vis the influence of the law on societal changes will be included.

CRJU 520
Philosophy of Punishment
Three Credits
The course covers the meaning of punishment throughout history, theories on its origin, its cultural relativity, and dominant philosophies on punishment. Students will view the different arguments proposed historically to defend or reject punishment from the points of view of retribution, deferment, social protection and rehabilitation, among others, as well as alternative methods of punishment.

Requisite: MSPA 500

CRJU 540
The Police and Juridical Changes
Three Credits
The course centers on the study of the dynamics involved in police functioning, as it is impacted by changes operating at the legislative level and subsequent judicial interpretations. The course will analyze the effects that these have on criminal investigations and how they affect the rights of delinquent persons.

CRJU 565
Seminar: Program Design and Evaluation in the Criminal Justice System
Three Credits
Various aspects of administrative programming and evaluation will be examined. The course involves theoretical and research concepts and problem analysis related to programming and program evaluation in the criminal justice system. It also includes design and study of evaluation instruments for police programs. Students will engage in analysis and management of strategies for operationalizing objectives, decision-making, and problem-solving.

Requisite: MSPA 530

CRJU 575
Criminal Treatment and Rehabilitation Programs
Three Credits
The course centers on an analysis of corrective philosophy and existing public policy regarding the rehabilitation of criminals and the relevant legal and constitutional dispositions. It will also analyze the different treatment and rehabilitation programs currently in effect at the various penal institutions in response to public policy. Treatment and rehabilitation models proposed and/or currently operating in Puerto Rico, the United States and other countries; their expectations, findings, and scientific grounding will be discussed. Students will also look at trends and reforms in rehabilitation programs for inmates.

Requisite: CRJU 500

CRJU 595
Seminar: Criminal Justice Investigation
Three Credits
The course focuses on an analysis of the administrative systems and the interrelationship of functions which affect public and private organizations. Students will consider the activities of planning, organization, design and formulation and adoption of decisions. They will also study problems related to the impact of government regulation on the private sector and its effect on administrative activity, as well as theories and concepts of human relations and behavior. The course provides the student with the tools needed for carrying out research in the specialization area.

Requisites: MSPA 510, plus 24 credits

CRJU 596
Internship
Three Credits
This is a supervised guided experience in select organizations and programs. Students will have to complete 130 hours in administrative functions.

Requisites: MSPA 510, plus 24 credits.

CRJU 600
Seminar: Crime, Victims and Society
Three Credits
The course focuses on an analysis of the responsibility of the state in protecting the life and property of its citizens. It will examine the possibility of the state compensating the victim of a crime for damages resulting from the criminal act. It will also look at the doctrine of restitution, compensation for damages by the offender, as part of a sentence intended to alleviate the impact of the damages and as part of the rehabilitation process of the criminal. Policies and practices regarding this issue in other jurisdictions will be comparatively analyzed.

Requisite: CRJU 500

CRJU 630
Organizational and Administrative Techniques of the Police
Three Credits
The course deals with the study of the organization and administration of the Puerto Rican police force. Emphasis is placed on organizational theory, administrative techniques, and procedures, as well as police administration and supervision programs. It analyzes alternative objectives, strategies, programs, institutional approaches, roles, perspectives and interagency relations of the police.

CRJU 635
Mental Health and the Law
Three Credits
The course centers on an analysis of the relationship between the mental health system and the law. It includes an in-depth look at the application of behavioral sciences techniques to the legal framework. Discussions concerning aspects such as diagnosis, risk, treatment, hospitalization, and mental disability viewed from a psycho-legal perspective, as well as the rights and responsibilities of institutional clients, their employees and the state, will also be included.

Requisites: MSPA 520, CRJU 500

CRJU 640
Addiction Problems: Legal and Psychosocial Aspects
Three Credits
The course deals with the study of the medical-legal aspects of drug addiction and alcohol abuse. It includes an analysis of the legal structure, from the framework of state and federal laws in the use and abuse of drugs and alcohol. Legislation, treatment and prevention programs will also be discussed.

Requisite: CRJU 500

CRJU 645
Comparative Correctional Systems
Three Credits
The course consists of a comparative study of correctional systems in Europe, the United States, Canada, Latin America and Japan. The study will be carried out from the perspectives of historical development, administrative organization, correctional philosophy, human resources, and treatment and rehabilitation programs for inmates. It will also consider the administrative and judicial mechanism to protect the rights of inmates, as well as post-prison assistance. Trends and prison reforms in each country will also be reviewed.

CRJU 650
Special Laws in Criminal Justice Administration
Three Credits
The course centers on an analysis of the special laws which regulate our legal conduct, including the basis for their creation, enforcement techniques, and jurisprudence. Students will discuss laws relating to weapons, confiscations, explosives, controlled substances, illegal numbers games, electoral law, transit vehicles, and mortgage institutions, among others.

Requisite: CRJU 500

CRJU 715
Seminar: Special Situations in the Administration of Correctional Programs
Three Credits
The course focuses on an analysis of the correctional scenario, including the psychological, administrative, and disciplinary perspectives. Students will explore the subculture of the penitentiary and how it is manifested. This course will focus on themes, situations, controversies, and problems inherent in this scenario, scientific findings, program dynamics and decisions or legislation which impacts the correctional system.

CRJU 730
Criminality, Crime Control and Criminal Justice
Three Credits
The course promotes a critical analysis of criminality from a sociological perspective. Particular emphasis is placed on the relationship of public policy, and the criminal justice administration: decision-making, implementation of programs, and evaluation of police participation. Students will discuss different strategies and models to reduce crime, as well as the new tendencies toward privatization of criminal justice services.

CHEM 761
Forensic Chemistry
Three Credits
The course covers theoretical bases and the application of laws and methods to the chemical analysis of organic and inorganic matter in forensic research. Methods of analytical and instrumental chemistry in the preparation of samples, the logistic of and analytical process, and the complements of instrumental techniques to the usual problems encountered in forensic investigation will be discussed. Interpretation of results in a scientific, statistically representative and judicially verifiable manner will also be included.

FORS 730
Forensic Investigation and Identification Techniques
Three Credits
The course deals with different methods and techniques used to identify and analyze physical evidence located at the crime scene. The following subjects will be discussed: elements of the crime scene and physical evidence, such as hair, fibers, paint, drugs, fires and explosives, fingerprints, DNA, firearms, and documents.

FORS 735
Investigation and Gathering Evidence at Crime Scene
Three Credits
The course focuses on responsibilities of criminal investigators to protect the crime scene, process and gather the evidence, and any other duty necessary in order to achieve the successful criminal prosecution of the accused.

FORS 740
Forensic Photography & Drawing
Three Credits
The course deals with photography techniques control of negatives, design and assembly of an index of photographs, among other topics. In reference to drawings, the student will be taught how to develop seven forensic drawing techniques in which a crime scene will be illustrated with measurements and distance between objects.

FORS 745
Expert Witness in Court
Three Credits
The course centers on the important role of the forensic investigator as an expert witness with the responsibility of working toward solving crimes. The student will learn and practice techniques related to testifying in court and responding to questions presented by the defense attorney and prosecutor. A court exercise will provide the student with practice.

FORS 750
Examination of Questionable Documents
Three Credits
The course focuses on the study and analysis of the theory and principles of handwriting and hand printing, duplicating processes, paper manufacture and fiber analysis, studies of different types of paper and methods of examining questionable documents.

FORS 755
Research Seminar
Three Credits
The course deals with the investigative study of techniques, visions, and models, and the administration, planning and

formulation of the decision-making process applied to the forensic sciences.

FORS 760
Forensic Psychology
Three Credits
The course deals with theory and practical strategies which will clarify the psychological conditions involved in the different judicial and mediation processes. It includes instruction of how to organize information in a scientific manner, thus validating the results from investigations performed within the juridical scenario.

FPSY 880
Psychology and Law: Criminal
Three Credits
This course will address the skills and competencies necessary for effective legal collaboration and expert testimony in the area of criminal law. The substantive areas of criminal law to be examined are: pretrial issues (competence to stand trial, competence to plead, right to bail); trial issues (affirmative defenses of criminal responsibility, temporary insanity, diminished responsibility, duress); pre-sentencing issues (mitigating and attenuating factors at the time of sentencing, competence to be sentenced); and, death penalty issues (Atkins hearings and intellectual disability, competence to be executed, mitigation factors). Psycho-legal controversies will be addressed in criminal cases of child abuse and maltreatment, domestic violence, substance abuse, and sexually violent predators.

FPSY 886
Psychology and Law: Civil
Three Credits
This course will address the skills and competencies necessary for effective legal collaboration and expert testimony in the area of civil and family law. The substantive areas of civil law to be examined are: involuntary treatment, civil commitment, assessment of competence for legal guardianship, personal injury (tort), and, sexual harassment and hostile environment in the work place. The substantive areas of family law to be examined are: child custody, parental rights, visitation, adoption, child maltreatment. The substantive areas of juvenile law are: waiver of jurisdiction, emancipation, rights of minors to consent to treatment.

FPSY 889
Forensic Mental Health Assessments
Four Credits
This course will address the advanced skills and competency needs of students that are required for assessments performed in legal referrals. The historical development of FMHA will be discussed including the formulation of specialty guidelines and clinical procedures responsive to legal directives. The FMHA course will train students in the selection, administration, correction and analysis of psychological tests most used in forensic referrals. The FMHA will provide training in interviewing techniques; clinical observation; and, integration of documents and third party data into clinical case conceptualization. Students will be trained in the model of personality analysis of Kellerman and Burry, used by graduate clinical training programs since 1981.

Requisites: FPSY 880 or FPSY 886

FPSY 891
Psychology and Law: Expert Testimony
Four Credits
This course will address the skills and competencies necessary for effective legal collaboration and expert testimony. Students will perform a forensic mental health assessment in collaboration with a legal aid clinic, district attorney's office, or court referrals. The assessment findings will be presented as expert testimony in a moot court in the classroom. Should the case go to trial, the student will be expected to present the assessment findings in court.

Requisites: FPSY 889

FSWO 600
Fundamentals of Forensic Social Work
Three Credits
Study of the origin and development of Forensic Social Work in the context of administration of justice. Emphasis on analysis of social worker's functions in a judicial environment, including the main processes of the social-legal system and its relationship with the different roles in the professional practice.

Requisite: SOWO 504

FSWO 605
Theoretical Frameworks in Forensic Social Work
Three Credits
Study of the epistemic foundations and theories applicable to the practice of Forensic Social Work. The course will emphasize the critical and comparative analysis of the different theoretical approaches and their application to forensic social assessments

Requisites: SOWO 500, SOWO 506, SOWO 505, SOWO 504

FSWO 610
Ethical and Legal Aspects and Jurisprudence in Forensic Social Work
Three Credits
The study and analysis of the ethical and legal aspects of jurisprudence in the intervention of the Forensic Social Worker. Appreciation of the components of penal laws, and procedural the substantive and aspects of family rights applicable to the practice of social work.

Co-requisite: FSWO 600

FSWO 612
Forensic Evaluation
Three Credits
This course is based on the application of scientific methodology and critical thinking in forensic evaluation. Presents the use of differentiated types of social forensic evaluation, instruments, rating scales and assessment tools in the forensic evaluation process.

Requisites: FSWO 600, FSWO 605

Co-requisite: FSWO 610

FSWO 615
Expert Report Evaluation and Drafting
Three Credits
Application of scientific method and critical reasoning in case assessment and writing expert reports. Use of different models, instruments and scales in the evaluation process.

Requisite: SOWO 505, FSWO 610

FSWO 620
Testimony Expertise
Three Credits
Theoretical and legal study of expert testimonial witnesses in Puerto Rico's courts and its implications for Forensic Social Work.

Requisites: SOWO 505, FSWO 610

Co-requisite: FSWO 615

FSWO 625
Expert Report and Testimonial Expertise
Three Credits
Application of scientific methodology, critical thinking and evidence-based practice in drafting expert's report. Theoretical and legal study of expert testimonial Witnesses in Puerto Rico's courts and its implications for Forensic Social Work.

Requisites: FSWO 610, FSWO 612

FSWO 630
Application of Diagnostic Criteria of Mental Disorders
Three Credits
Study of the descriptive and dynamic aspects of mental disorders with emphasis in the forensic scenario and its implications in the Forensic Social Work practice.

Requisite: FSWO 610, FSWO 612

FSWO 635
Forensic Focus on Substance Abuse
Three Credits
Study of clinical and social manifestations of substance abuse, the legal consequences and forensic scenarios of treatment and rehabilitation. Analysis of intervention models.

Requisite: FSWO 620

FSWO 640
Practicum I Seminary: Establishment of the Professional Relationship
Three Credits
Complementary course of Supervised Practice I (FSWO 650) that will allow the integration of critical thinking and the application of ethical values and principles of Social Work experience to the supervised practice. It emphasizes the application of knowledge and skills in establishing a professional relationship considering the respect for diversity.

Requisites: FSWO 615, FSWO 625

FSWO 641
Practicum II: Application of Methodology and Theoretical Frameworks in Forensic Social Assessment
Three Credits
Supplementary Course of the Supervised Practice II Course (FSWO 660) that will allow the integration of scientific methodology, the critical thinking and evidence-based practice in the evaluation of cases, report writing and delivery of forensic testimony.

Requisite: FSWO 640, FSWO 650

Co-requisite: FSWO 660

FSWO 642
Psychosocial and Legal Aspects of Violence in the Family
Three Credits
Analysis of the psycho-social and legal aspects of violence within the family: etiology, epidemiology, and evaluation of jurisprudence and related laws.

Requisite: FSWO 635

FSWO 650
Practicum I: Forensic Social Work Practice
Three Credits
First supervised practice experience in a non- governmental agency or organization. Allows analysis of the philosophy, values and organizational policies and performance of the roles of professional social work in the forensic interdisciplinary agency team or organization.

Requisite: FSWO 615, FSWO 625

Co-requisite: FSWO 640

FSWO 660
Practicum II: Forensic Social Work Practice
Three Credits
Continuation of the supervised practice experience (FSWO 650). Demonstration of legal specialized knowledge in ethical, legal and case law Application of jurisprudence of the skills in the drafting of social reports and the process of expert testimony.

Requisite: FSWO 650

Co-requisite: FSWO 641

MHSA 604
Human Services Administration: Organizations, Policies and Alternatives
Three Credits
The course centers on discussion, analysis and application of administrative procedures in the human services programs. It includes the study of the organization, policies, and alternatives for community development.

Requisite: MSPA 500

MHSA 608
Leadership and Community Development
Three Credits
The course deals with discussion, analysis and application of leadership techniques for community development and human services organizations. It includes the study and application of problem-solving techniques, leadership development, and the mobilization of inter-organizational resources.

Requisite: MSPA 500

MHSA 612
Seminar: Program Design in Human Services
Three Credits
The course centers on discussion, analysis and application of models, theories and scopes for program design. It includes the study of structural and programmatic designs of human services organizations.

Requisite: MSPA 530

MHSA 622
Grant-Writing and Fundraising
Three Credits
The course deals with models, techniques and strategies for fundraising and grant writing.

Requisite: MHSA 604

MHSA 644
Research Seminar: Project in Human Services Administration
Three Credits
The course centers on development of a research project related to administrative procedures in a human services organization.

MHSA 645
Internship
Three Credits
This is a supervised guided experience for graduate students in selected human service organizations. Students will have to complete 130 hours in administrative functions in an organization devoted to human services.

Requisites: MSPA 510 plus 24 credits

MHSA 652
Seminar: Contemporary Issues in Human Services Management
Three Credits
The course deals with contemporary issues in human services management. It includes an analysis of tendencies and alternatives for enriching the administration of human services.

Requisite: MHSA 604

MHSA 654
Legal Aspects in Human Services Administration
Three Credits
The course focuses on an analysis of the legal aspects, by-laws, and ethical principles in human services administration.

Requisite: MSPA 520

MHSA 656
Grants Management
Three Credits
The course covers theories, models, scope, and techniques for effective and efficient grants administration.

Requisite: MHSA 622

MHSA 658
Intergovernmental Relations
Three Credits
The course deals with an analysis and discussion of the theoretical, constitutional, political and fiscal aspects of the intergovernmental relationships among state, federal and local governments.

Requisite: MSPA 520

MHSA 668
Seminar: Human Behavior in Organizations
Three Credits
The course deals with an analysis of the systematical relationship between human behavior, organizational objectives and clientele services. An analysis of the psycho-social system in organizations is also included.

Requisite: MSPA 540

MHSA 672
Labor Law
Three Credits
The course centers on an analysis of the constitutional principles, laws, regulations, and judicial decisions that protect public employees in Puerto Rico.

Requisite: MSPA 520

MHSA 674
Human Development
Three Credits
The course deals with theories of human development. It includes an analysis of the relationship among physical, intellectual, and social influences on all stages of human development.

Requisite: MHSA 604

MHSA 676
Total Quality Management in Human Services Organizations
Three Credits
The course centers on the application of the Total Quality Management theory in human services organizations. It includes study of the principles of teamwork, decentralized management, labor commitment, and quality manager.

Requisite: MHSA 604

MSAA 701
Basics Fundamentals of Arts Administration
Three Credits
The course presents a general view of arts administration, within which the theoretical, philosophical and practical principles of the field are analyzed to prepare students whose professional objective is a career in arts management.

Requisite: MSPA 500

MSAA 703
Arts Marketing
Three Credits
The course focuses on strategies for the exchange of goods, services and ideas in selected markets.

Requisite: MSAA 701

MSAA 707
Grant Writing and Fundraising for the Arts
Three Credits
The course deals with essential principles of fundraising and grant writing in arts administration.

Requisites: MSAA 701, MSPA 530

MSAA 708
Museology
Three Credits
The course focuses on concepts and models of collection, conservation and communication in museology and museography. The objective is to prepare and update personnel of museums, galleries, and cultural centers.

Requisites: MSSA 701, MSPA 510

MSAA 709
Representational Arts Administration
Three Credits
The course covers key aspects of the administration of representational arts, such as festivals, concerts, musical spectacles, dance, theater and other popular arts.

Requisite: MSSA 701

MSSA 710
Museum and Visual Arts Center Administration
Three Credits
The course centers on an analysis of the theoretical, ethical and practical principles of museum and visual arts administration.

Requisite: MSSA 701

MSSA 725
Seminar: Special Themes in Arts Administration
Three Credits
The course deals with relevant and pertinent topics in the administration of the arts. The student will explore specific information and strategies utilized by arts administrators and renowned exponents of artistic achievement. Distinguished professionals in the field will be invited as guest lecturers to discuss current tendencies in the arts administration.

MSSA 711
Research Seminar
Three Credits
The course focuses on the development of a research project related to such administrative procedures as planning, marketing, and evaluation in an arts organization.

Requisites: MSPA 510 plus 24 credits

MSAA 712
Internship in Arts Administration
Three Credits
This is a supervised guided experience in selected arts organizations for graduate students. Students will have to complete 130 hours in administration in an art organization.

Requisites: MSPA 510 plus 24 credits

MSAA 725 - 726
Special Topics on Arts Administration I and II
Three Credits Each
Analysis and discussion of relevant and pertinent topics in the administration of the arts. The student will explore specific information and strategies utilized by arts administrators and exponent of renown artistic achievement. Distinguished professionals in the field will be invited as lectured to discuss current tendencies in the administration of the arts.

MSPA 500
Theory, Practice and Change in the Administration of Public Policy
Three Credits
The course covers modern age theories and ideologies which guide and shape the development, administration, and evaluation of public policy. This course focuses on understanding the concepts of individualism, collectivity, and community development espoused by behavioral philosophers and scientists. It includes an analysis of the conceptual requirements of planning, as well as its methods and applications. The course also promotes a critical analysis of the various models which translate public policy and its application to specific approaches and concrete actions.

MSPA 505 @
Computer Education for Public Administrators
Three Credits
The course covers basic knowledge in the use of computers (computer literacy). Three basic areas are developed: (1) the ability to use the technological innovations, (2) the ability to incorporate the technological innovations into a particular area of interest, and (3) the ability to implement strategies and policies geared to the improvement of the administration team.

MSPA 510
Research and Quantitative Methods in Public Administration
Three Credits
The course deals with concepts in research methodology and statistics which are applicable to the public affairs program. A multidisciplinary approach appropriate for the public affairs professions will be presented. The course will also develop in students the capacity for objective decision-making with a minimum of prejudice and subjectivity. Practical elements of methodology and applied statistics will be emphasized.

Requisite: Statistics 300

MSPA 520
Administrative Law and Ethics
Three Credits
Students become familiar with the set of legal norms and regulations concerning the various organizations, institutions, and public agencies, as well as with the criminal justice system, the ordinances of services legally pertaining to these agencies, and the relations between these agencies and the individuals receiving those services. It includes the dispositions which govern administrative processes, as well as ethical models in public administration.

Requisite: MSPA 500

MSPA 530
Planning and Evaluation: Theories, Methods and Techniques
Three Credits
This course prepares students to face administration problems, to find possible solutions, and to evaluate results once a particular alternative is implemented. It presents a broad view of the various planning theories in order for students to enter into the process of implementation and evaluation.

Requisite: MSPA 510

MSPA 540
Seminar: Planning, Development and Evaluation of Human Resources
Three Credits
The course will cover the following areas: (1) concepts and theories on communication, leadership, human motivation, perception, emotions, personality, mental health and the decision-making process; (2) principles of organization and administration in Puerto Rico; (3) analysis of the components which comprise the administration of human resources, such as recruitment and selection of personnel, job classification and evaluation, retribution systems, human resources evaluation, personnel training, retirement, motivation, and human relations in public administration, as well as patterns

of individual and group associations in the organizational scene.

Requisite: MSPA 520

MSPA 550
Fiscal Resources Management
Three Credits
The course centers on the study of the administration and formulation of fiscal policy in the public sector and in nonprofit organizations. It includes an analysis and evaluation of concepts, theories, models, scope, and strategies in the budgetary process.

Requisite: MSPA 530

MSPA 710
Research Seminar for Public Affairs
Three Credits
The seminar offers students the opportunity to carry out an investigation integrating the knowledge obtained through the analysis of administrative systems and their contingent functions and how they affect public and private institutions. Students will analyze planning, organizational, and design activities and the decision making process in the organization.

Requisites: MSPA 510 and 24 concentration credits approved

MSPA 720
Practicum in Public Affairs
Three Credits
Supervised practicum in administrative functions in a public or non-profit organization. Students will complete 130 service hours in the application of knowledge, theories, values, methods, and administrative skills in the organization.

Requisites: MSPA 510 and 24 credits approved.

PSYC 500
Developmental Psychology
Three Credits
The course presents a general view of the philosophical, historical, sociological, biological, and psychological foundation of human development. It includes an introduction to different developmental theories and their exponents, as well as the different stages of human development: physical, motor, moral, sexual and cognitive. Changes during each stage will be analyzed and discussed.

PSYC 501
Social and Ethnological Aspects
Three Credits
This course is about the dynamic relationship between social psychology and ethnological foundations of personality development.

PSYC 502
STATISTICS
Three Credits
Analysis and discussion of statistical methods and its applications to Psychology.

PSYC 503
Theories of Personality
Three Credits
The course deals with the principal theories of personality formation and functioning. These theories will be critically analyzed in order to weigh their sociocultural relevance and implication in the practice of counseling psychology.

PSYC 504
Psychopathology
Three Credits
The course centers on the study of behavioral and personality disorders; considerable emphasis will be given to those disorders of higher prevalence in Puerto Rican society. Analysis of different disorder models will be considered; usage and management of the Diagnostic and Statistical Manual of Mental Disorders DSM IV (TR) will also be covered.

PSYC 505
Psychological Assessment and Measurement
Three Credits
The course covers basic topics in psychological assessment, such as its historical development, basic statistical analysis, test construction, ethical standards, evaluation as a process, and the role of computers. Different tests will be used, including the Weschler Scales, Raven, Vineland, Bender, Beery, Draw a Person and the Woodcok Muñoz Battery.

PSYC 506
Research Methods and Statistics
Three Credits
The course introduces students in behavioral research methods and statistics related to investigations in psychology. Tools to better understand the assumptions and limitations of current research will be discussed. Finally, the course promotes a learning approach to research design and statistics in line with today's research by drawing examples from real investigations and providing students with opportunities to learn and apply concepts.

PSYC 508
Test Construction: Theory and Application
Three Credits
Discussion and analysis of major principles and concepts of test construction in psychological measurement. Methods for determining validity and reliability will be examined by performing class exercises. The content also includes the study of scaling methods such as Guttman, Thurstone, and Likert scales. Moreover, students will apply knowledge from the course to construct their own assessment instruments.

PSYC 510
Motivation and Learning
Three Credits
This course focuses on different theories concerning motivation and learning processes. Their scope, importance and relation to human behavior will be discussed.

PSYC 520
Foundations of Neurophysiological Psychology
Three Credits
The course deals with the structure and function of the nervous system. Considerable emphasis is placed on the relationship between the organism and behavior, and the higher cortical process.

PSYC 530
Research Methods
Three Credits
The course is an introduction to research methods for behavioral sciences. This course will provide an opportunity for students to learn basic concepts and statistical analysis for data processing. Emphasis is on scientific research as a way to improve the professional practice of psychologists. It also promotes a balanced emphasis between conducting and consuming research.

PSYC 550
Practicum I – Initial Interview and Psychological Contact
Two Credit + one contact hour
Through a didactice and experiential approach, this course aims to help in the personal and professional growth of the psychologist, under supervision of a faculty member. Its rationale rests on both the intra and interpersonal development of the student (control of feelings, attitudes and prejudices towards the client and behavior), as well as on the skills and knowledge related to the initial interview associated with the establishment and development of the therapeutic relationship, and conceptualizing about the psychological relationship, decision-making, self-evaluation and the psychological contract, among others. The student will also learn and master the concepts of the Code of Ethics in Psychology of Puerto Rico.

Requisite: PSYC 504

PSYC 551
Practicum II – Diagnostic and Psychotherapeutical Intervention Plan
Two Credits + one contact hour
This course provides prospective counseling psychologists with the experience needed to deal with the diagnosis, conceptualization and development of a psychological intervention plan.

Requisite: PSYC 550

PSYC 575
Practicum III - Psychotherapy Intervention: Individual Modality
Three Credits
This practicum provides the student with the acquisition for psychotherapeutic intervention basic skills at the individual modality. Supervised practice will facilitate such skills development during the psychotherapeutic process.

Requisites: PSYC 550, PSYC 551

PSYC 600
Practicum IV: Psychotherapy Intervention Group Mode
Three Credits
The aim of this practicum is to help students develop the basic skills necessary to form, intervene, and set up a group's psychotherapeutical goals.

Requisite: PSYC 575

PSYC 725
Neuropsychological Evaluation
Three Credits
This course includes different evaluation methods to assess the degree of damage to the central nervous system. It covers cognitive, behavioral and emotional functioning.

PSYC 800
Ethics and Professional Standards
Two Credits
This course provides a critical examination of the codes of ethics and laws that regulate the practice of psychology in Puerto Rico. It also examines the APA Code of Ethics and the Guidelines for the Practice of Counseling and Clinical Psychology. A study of the local and federal laws that in some way protect and regulate the psychologist and the population served is also conducted.

PSYC 805
Psychopharmacology
Two Credits
The objective of this course is to study the history and use of psychotropic drugs. Emphasis is placed on understanding the uses of these drugs, their mechanisms, side effects, and the

conditions under which they are used. Relationships between major DSM IV (RT) classifications and appropriate medications are presented.

PSYC 806
History and Systems in Psychology
Three Credits
The course centers on a critical analysis of the historical development of psychology, including philosophical and scientific antecedents and the systems that have impacted contemporary psychology. The relationship between psychology theories and social events and the present status of psychology in Puerto Rico will also be discussed.

PSYC 810
Advanced Psychopathology
Three Credits
This course deals with the identification, evaluation, and the descriptive psychopathology of personality disorders. The student will be able to compare different approaches to the diagnosis, understanding and treatment of personality disorders.

PSYC 815
Cognitive and Affective Bases of Behavior
Course Syllabus Medullar
Three Credits
This course will focus on the principal theories and current research regarding the fields of cognition and emotions. Discussion of historical antecedents of the main theories and concepts, the most important investigations that have shaped both fields in the past and current knowledge of the multiple cognitive and affective processes. Each will be discussed from their biological, social and psychological perspective and will likewise, explore the clinical applications and implications of the findings in counseling psychology.

PSYC 820
Advanced Assessment
Three Credits
This course focuses on the advanced study of the application of personality assessment procedures such as MMPI. Alternate methods for measuring human behavior are also studied. Laboratory practice of 30 hours is required (PSYC 820 L).

Requisite: PSYC 800

PSYC 840
Racial, Gender, Ethnic, and Cultural Diversity
Two Credits
This course is designed to analyze the impact of cultural differences in the practice of counseling psychology. It includes a discussion of the interactive effects of gender, race, and ethnicity. Cross-cultural counseling methods are also studied.

PSYC 843
Family Violence
Three Credits
This course will provide an introduction to family violence. It will include definitions, theories, and identifiable causes, relevant issues related to victims and legal aspects.

Requisite: PSYC 834

PSYC 850
Models of Clinical Supervision
Three Credits
This course examines the current definitions and applications of clinical supervision; the major models of clinical supervision will be discussed.

PSYC 930
Qualitative, Quantitative Methodology and Descriptive Statistics
Three Credits
From a pragmatic point of view, this course is meant to give the graduate students an overview of the main types of scientific approaches used in psychological research: qualitative, quantitative and mixed. The main goal of the course is to provide students the necessary information about different paradigms used in the psychological field, as well as the descriptive statistical concepts needed to understand, mainly, in the quantitative approach.

PSYC 931
Descriptive Research Methods
Two Credits
This course focuses on the structure and process of descriptive research in psychology. The concepts of relationships, correlations, descriptive paradigms and descriptive statistical analysis are presented. Computer applications, logistical issues and ethical considerations are also examined.

PSYC 932
Experimental Research Methods
Two Credits
The course deals with the study of the structure and processes of experimental research in psychology. The concepts of probability, cause-effect relationships, experimental and quasi-experimental paradigms will be discussed. Ethical considerations will also be examined.

PSYC 933
Consulting Psychology
One Credit
Basic concepts in psychology consulting, theories and practical processes of consulting are discussed in the coursed. The areas of research, evaluation, education, and training are included.

PSYC 936
Program Evaluation Methods
Two Credits
This course emphasizes the acquisition of knowledge and skills in program evaluation methodology. Alternative evaluation approaches are surveyed with a focus on developing a management/decision-oriented evaluation plan. This seminar also serves as a practicum for the conceptualization and development of a doctoral research study that employs a program evaluation model.

PSYC 938
Supervision and Consultation in Counseling Psychology
Three Credits
This course will present and analyze the major supervision models and their application to psychotherapy and diverse contexts; among them, educational/training settings. It will present the differences between the supervisor and consultant role. Most common consultation settings for psychologists such as schools and organizations will be presented and discussed. Some of the contemporary strategies and techniques, such as coaching and mediation will be presented and practiced.

SOWO 500
Human Behavior and Social Environment
Three Credits
Study of the human development stages and the influence of biological, psychological, and socio-cultural elements in the individual, family, and group functions in a social environment. Analysis of the ethnic, gender and the contribution of culture and the socio-economic and historical factors in social behavior.

SOWO 501
Analysis of the Social Reality of Puerto Rico
Three Credits
Critical analysis of social, cultural, political, economic and historical aspects that contextualize the practice of Social Work. Examination of the economic development model of country, globalization, neo-liberalism and its impact on the ethical-policy practice of the profession of Social Work in Puerto Rico with vulnerable and oppressed groups.

SOWO 502
Diversity, Oppression and Social Justice
Three Credits
Study of the structural conditions in the production and reproduction of oppression toward different groups. Analysis of the manifestations of oppression and implementation of theoretical frameworks in practice with diverse populations.

SOWO 503
Intervention Models in Social Work
Three Credits
Study, analysis, and application of intervention models in the practice of Social Work, focused on the achievement of knowledge and skills necessary for the assessment, contract and intervention plan in practice with individuals in different groups.

SOWO 504
Social Policy and Social Welfare Services
Three Credits
Study of social policy in the United States, Puerto Rico and Latin America. Analysis of the development and relationship with Social Work from a social, economic, historical and political perspective.

SOWO 505
Research in Social Work
Three Credits
Study and application of social scientific research, integrating professional ethics in the design of a research proposal in Social Work.

SOWO 506
Analysis of Social Reality, Oppression and Social Justice
Three Credits
Critical structural conditions that contextualize the practice of social workers in Puerto Rico analysis. Study of the manifestation of oppression and theoretical frameworks in practice with diverse populations.

SPSY 600
Psychological Services in Educational Settings
Three Credits
Analysis of the psychologist's roles and duties in the school setting as evaluator, therapist, consultant, researcher and trainer. The integration of psychological services to the school professionals, teachers, administrators, parents and students.

SPSY 602
Legal and Ethical Issues of the School Psychology Services
Two Credits
Critical analysis of the codes of ethics, local and federal laws that regulate the practice of school psychology in PR.

SPSY 604
Psychoeducational Diagnosis of Exceptional Persons
Four Credits
Basic evaluation methods for diagnosis of exceptional persons: psychological and educational strategies in psychoeducational assessment, Evaluation in the school setting: academic progress, basic skills, social performance and cognitive aspects.

Requisites: PSYC 505, SPSY 600, SPSY 602

SPSY 608
Behavior Modification I: principles and procedures
Prontuario de curso de especialidad
Three Credits
Analysis of the principles and procedures of behavior modification. Will examine how environmental events influence human behavior, what behavior modification is and how it works.

SPSY 609
Behavior Modification II: Discipline handling and problem solving at school
Three Credits
Approaches and technics related to different disciplinary models. Analysis and discussion of the most effective disciplinary strategies for the different problems confronted by teachers and students; consequences of each strategy; ethical and legal implications.

Requisites: SPSY 608

SPSY 613
Conflict Mediation and the Prevention of School Violence
Three Credits
Critical analysis of the mediation process as a method of managing conflicts in a non-adversative way in the school setting: theoretical foundations, stages in the mediation process, strategies and technics that have proved to be effective in handling disputes among teachers, parents, and students.

Requisites: SPSY 600

SPSY 650
Special Issues in School Psychology
Two Credits
Analysis and discussion of relevant topics of the principles and the practice of school psychology: consulting, traumas, short term therapies, crisis intervention, family and school interaction.

Requisites: SPSY 600, SPSY 608, SPSY 609

SCHOOL OF PROFESSIONAL STUDIES

SCHOOL OF PROFESSIONAL STUDIES 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 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.

Admissions Requirements

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

1. 21 years of age or older
2. 2 years of work experience
3. 12 credits of academic work at the postsecondary level

STAFF

Mildred Rivera / Assistant Vice-president

Viviana Barrabia /Associate Dean

MASTER'S DEGREES

Instructional Design and Technology Integration with e-Learning

Total Credits	**39**
Core Courses	**18**
Specialization Courses	**18**
Elective Courses	**3**

Core Courses		**(18 credits)**
ETEG 500	Applied Instructional Design Models	3
ETEG 501	Fundamentals of Educational Technology	3
ETEG 502	Fundamentals of Distance Education	3
ETEG 503	Curriculum Design and Instructional Design for the Adult Learner	3
ETRE 525	Applied Research	3
ETEG 504	Technology Immersions	3

Specialization Courses		**(18 credits)**
ETEL 600	E-learning, Technology Integration and Multimedia	3
ETEL 601	Development of Corporate Virtual Training	3

ETEL 602	Distance Education Assessment	3
ETEL 603	E-learning and Virtual Learning Communities	3
PRTE 630	Instructional Design and Technological Project I	3
PRTE 640	Instructional Design Technological Project II	3

Elective Courses **(3 credits)**
(Select one course)

ETEL 604	Applied Instructional Designs for the Corporate World	3
ETEL 605	Applied Instructional Designs for the Corporate World	3

Strategic Leadership and Management

Total Credits	**39**
Core Courses	**21**
Specialization Courses	**12**
Elective Courses	**3**
Grade Requirement	**3**

Core Courses **(21 credits)**

ACCO 501	Managerial Accounting	3
ECON 519	Managerial Economics	3
FINA 503	Managerial Finance	3
MANA 501	Organizational Behavior	3
MANA 600	Research Methods	3
MARK 511	Marketing Management	3
STAT 555	Statistics for Decision-Making	3

Specialization Courses **(12 credits)**

STMG 600	Leadership and Entrepreneurial Vision	3
STMG 601	Strategic Management	3
STMG 602	Technological Applications and Information Systems	3
STMG 603	Business Communication	3

Specialty Elective Courses **(3 credits)**
(Select one course)

PRMG 530	Introduction to Program Management	3
PRMG 640	Project Management II: Project Planning	3
STMG 608	Strategies for Change, Professional and Entrepreneurial Development	3
STMG 604	Organizations in a Global Economy	3

Grade Requirement **(3 credits)**
STMG 738

COURSE DESCRIPTIONS

ETEG 500
Applied Instructional Design Models
Three Credits
An introduction to Instructional Design (ID) theories. ID Models will be studied, such as Mayer (1999) SOI model; Merrill (1983, 1994) CD Model; Jonnassen (1999) CLEs Model, ASSURE ISD model (1985). This model integrates the Robert Gagné Instructional event, as well as, ADDIE (1975) and Dick and Cary (1990) models. This course will analyze, conduct needs assessment, improvement of performance, systematic design of materials, teaching strategies, and evaluation, both formative and summative, of instructional materials.

ETEG 501
Fundamentals of Educational Technology
Three Credits
Educational technology fundamental theories, concepts, and trends will be studied. Terminology, definitions, and development of the educational technology will be analyzed from a professional and reviewer perspective. The role of the Educational technologist and the professional practices will be analyzed in accordance to the most recent changes in technology of the 21st Century. The course will include research, case studies, and readings related to the field.

ETEG 502 @
Fundamentals of Distance Education
Three Credits
Distance Education's fundamental theories and philosophy will be discussed. Students will evaluate the technologies that might be incorporated into distance education, as well as, teaching and learning strategies for the modality. Emphasis will be given to the Internet, video clips, video-conference, and the selection and impact of the most appropriate medium and technologies for both synchronic or asynchrony distance education instruction.

ETEG 503
Curriculum Design and Instructional Design for the Adult Learner
Three Credits
Introduction to the principles of curriculum design for an adult population, and the development of innovative strategies to be used with this population will be discussed. The use of evaluation methodology and the selection of constructivism strategies for instructional design and implementation will be emphasized.

ETEG 504
Technology Immersions
Three Credits
Study and integration of the most commonly used applications and software for Instructional design purposes. New technological trends and open source multimedia, WEB 2.0, the new world of virtual reality, and its contributions to corporate organizational processes in cultural, educational, and social environment swill be studied

ETEL 600
E-learning, Technology Integration and Multimedia
Three Credits
Introduction to the effective use of instructional media and e-learning strategies for promote new skills and knowledge, with the support of internet communication technologies. The planning and production, design of an instructional module that integrates the different technologies and available multimedia as learning tools will be discussed. Instructional media evaluation as teaching and learning support (video, audios, CDs, DVDs).

ETEL 601 @
Development of Corporate Virtual Training
Three Credits
This course emphasized in the design, concepts and strategic planning required for developing corporate training related to personnel professional development. Students will analyze the philosophic concepts that guide the different virtual training models. It emphasizes the selection, adaptation and practices of different methods, strategies and activities used today online in organizations.

ETEL 602 @
Distance Education Assessment
Three Credits
Study of different strategies and phases of the assessment that allows interpretations and use of the data collection related to the students learning process. A systematic approach for developing significant learning and comprehension required to develop student's knowledge as a result of the educational experience will be emphasized. Electronic assessment techniques like e-portfolios, e-rubrics, and e-forms will be used, as well as a variety of Open Technologies that support distance education.

ETEL 603 @
E-learning and Virtual Learning Communities
Three Credits
Study of media and technology used in distance education, such as video clips, audio, blogs, wikis, and open source, among others. Classes will be conducted synchronized and asynchronous in order to promote the new virtual environment of the 21st Century. Critical analysis of the principles and theories of e-learning, communication media research, and effective teaching techniques for implementing virtual learning communities will be covered.

ETEL 604 @
Applied Instructional Designs for the Corporate World
Three Credits
An introduction to the theories and foundations of the systematic design of instruction by integrating learning strategies focused on the corporate world. Among the topics, the analysis of improving employee performance, through a systematic design of materials, learning experiences and integrating technologies for the adult learner, implementation of the ID, need of assessment, and formative and summative evaluations will be covered.

ETEL 605
Applied Instructional Designs for the Academy
Three Credits
Introduction theories and Foundations of systematic instructional design based on Dick and Carey model, focusing on the strategies for the adult learner integrating constructivism. The student will design a unit using the nine steps of this model in the instructional design including the strategies for an adult population.

Requisites: Core courses

ETRE 525
Applied Research
Three Credits
Analysis of research methods and the integration of methodology to the real World. Compilation, organization and analysis of data for decision making process and for the implementation of changes. Immersion of statistical data with the research methodology. Development of measurement and evaluation instruments, as well as researcher's responsibility in relation to federal regulations of the Institutional Review Board (IRB}. The course devotes special emphasis to the research skills as applied in this particular field of knowledge, but maintaining the tradition of the scientific investigation. Application of results to the distance learning discipline.

Requisites: Core courses

PRMG 530
Introduction to Program Management
Three Credits
Analysis of processes related to Program Management. Comprehension of a projects' life cycle and the importance of evaluating its different phases in the achievement of organizational goals. Emphasis in the development of skills and competencies related to planning and methodologies of the area. Study of general theoretical and practical related concepts. Contrasts between project and operations.

PRMG 640
Project Management II: Project Planning
Three Credits
Analysis, action plan development and usage of effective methods in project management. Study of processes in the planning and initial phases of projects. Critical analysis of inputs, products, tools and techniques used in project management processes. Application of related terminology and definitions.

Requisite: PRMG 530

PRTE 630
Instructional Design and Technological Project I
Three Credits
Individual supervised project consisting of presenting an innovative technological instructional design as a solution to a real educational problem of practical nature. Discussions will be held to guide students in identifying the problem, present the hypothesis, research, data collection, data analysis, interpretation, presentation, and conclusions. Significant information must be presented to prove the need of the technology integration as a tool for virtual education environments.

Requisites: Core courses

PRTE 640
Instructional Design Technological Project II
Three Credits
Individual supervised project consisting of research and critical analysis of instructional design models for virtual educational environments. Study of the model's process for distance education and e-learning will be emphasized. Discussions will be held to guide students in identifying the problem, present the hypothesis, research, data collection and data analysis, interpretation, presentation and conclusions. Significant information must be presented to prove the need of the Instructional Technologist and the performance of students' involvement in virtual learning communities.

Requisites: Core courses

STMG 600
Leadership and Entrepreneurial Vision
Three Credits
Analysis of roles and styles of a leader as an agent of change through the articulation and construction of the organization's vision and mission. The course includes theoretical and analytical studies of types of leadership strategies, leadership styles and organizational context in which the leader works. Human resources strategies for empowerment and their impact in the organizational culture are also explored. Application of theoretical knowledge in relation to individual, interpersonal and group behavior within the organization. The course addresses the study of leadership and organizational behavior in a continuous changing global environment.

Requisites: core courses

STMG 601
Strategic Management
Three Credits
Analysis and application of concepts such as ethics and social responsibility. Evaluation and application of elements related to identifying opportunities and analysis of business strengths and weaknesses. Emphasis in the application of the vision, mission, goals and objectives for the development of strategies in the planning process. Development of a strategic plan that includes identification and evaluation of alternatives for its control. This course is targeted to the development and application of analytical skills related to strategic planning.

STMG 602
Technological Applications and Information Systems
Three Credits
The course develops strategic management skills in entrepreneurial leaders for the operational integration of different information resources. It allows for the identification, analysis and evaluation of alternatives for the improvement of the organizations' effectiveness. The course also emphasizes the importance of technology for strategic planning and problem solving. This course focuses in the development and application of the knowledge and skills needed to understand, evaluate and make decisions related with information systems.

STMG 603
Business Communication
Three Credits
This course develops the needed communication skills for the efficient, effective and successful performance of the modern leader. It emphasizes the relationship between effective leadership and communication, its role, both internally and externally. Also included are the types of communication in the organization, reinforcing with the critical use of various techniques and the integration of technologies that support the management process of the effective leader. This course analyze the responsibilities and tasks inherent in properly informing management decisions, how to handle communication in times of crisis and the expectations and tendencies of the leader as a communicator. It also emphasizes the support provided by the leader in the processes of changes and challenges of communication and the leader in the entrepreneurial dynamics.

STMG 604
Organizations in a Global Economy
Three Credits
This course studies of the opportunities that global economy offers to management. Analyze economic principles based on problem examination and the challenges presented on a globalized economy. It includes decision making on financial, economic and stock market issues. This course evaluates strategic opportunities and risks regarding organizational development in the global context.

STMG 608
Strategies for change, professional and entrepreneurial development
Three Credits
Strategic analysis of topics in the areas of power relations and resistance to change, motivation, and human behavior. Tolerance and respect for diversity and group dynamics. Evaluation and design of strategies for the development of a world-class organizational culture. Emphasis in environmental and structural forces within the organization. Appraises the different variables related to the organizational capacity for managing change and the development of plans and strategies.

APPENDIX

Appendix A

Satisfactory Academic Progress Tables

Postgraduate Certificate Programs		
Credits Attempted	% of Credits Earned	GPA
1 – 15	60%	3.00
16 +	67%	3.00

Credits Attempted	% of Credits Earned	GPA
1 – 72	55%	2.00
73 – 145	60%	2.00
146 +	67%	2.00

Graduate Degree Programs (Masters and Doctorates)		
Credits Attempted	% of Credits Earned	GPA
1 – 18	55%	3.00
19 – 36	60%	3.00
37 +	67%	3.00

Naturopathic Medicine Doctorate Program