



UPR

Universidad de Puerto Rico
A R E C I B O

CATALOG 2016-2020



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GENERAL INFORMATION

HISTORY OF UPRA

The University of Puerto Rico at Arecibo was founded in 1967 as the Arecibo Regional College. It began its operations in April of that year with an enrollment of 515 students and a staff of 28 faculty members. In 1974, its present permanent facilities, located on a 49 acre lot in the "Las Dunas" sector, Route 129, Highway 653, kilometer 8 in Arecibo, were inaugurated. After thirteen years as the Arecibo Regional College the Council on Higher Education by virtue of its Certification number 323 of the 1980-81 series authorized the conversion to the Arecibo Technological University College. As a result of this transformation the Arecibo College expanded its offerings to include four-year bachelor's programs. On July 1, 1998, by virtue of Cert. 151 (1997-98) and in accordance with Act 16 (June 16 1993), the Board of Trustees of the University of Puerto Rico bestowed institutional autonomy to ATUC, which then became the Arecibo University College. Shortly thereafter, on March 9, 2000, the Board of Trustees authorized yet another change of name. The institution became the University of Puerto Rico at Arecibo (Board of Trustees Cert. 103, 1999-2000).

Current enrollment at the University of Puerto Rico at Arecibo is approximately 4,900 students with a faculty of around 277 members. UPRA offers 14 bachelor's degree programs, 3 associate degree programs, and 7 articulated transfer programs.

UPRA received its official accreditation as an institution of higher learning in 1967 by the Middle States Commission on Higher Education (MSCHE). In 1994, the bachelor's degree programs were accredited for an additional ten-year period. On November 18, 1997, the Council on Higher Education approved a License of Renewal for the Arecibo Technological University College to continue operating as an institution of higher education in Puerto Rico. The MSCHE and the CHE reaccredited UPRA in 2007.

The following programs are accredited by external professional agencies:

- ✚ Elementary Education and Physical Education for Elementary Level Programs by the Council for Accreditation of Educator Preparation (CAEP)
- ✚ Information Technology Management and Administrative Processes by the Accreditation Council for Business Schools and Programs (ACBSP)
- ✚ Business Administration by the Accreditation Council for Business Schools and Programs (ACBSP)
- ✚ Computer Sciences by ABET
- ✚ Television and Radio Communication by the Council of Education in Journalism and Mass Communication (ACEJMC)
- ✚ Nursing by the Accreditation Commission for Education in Nursing (ACEN)
- ✚ Technology in Industrial Chemical Processes by ABET.
- ✚ The Library received recognition by the Association of College and Research Libraries (ACRL).

MISSION STATEMENT

(UPRA Academic Senate Certification 2002-03-32, as amended by UPRA Academic Senate Certification 2013-14-13)

The University of Puerto Rico at Arecibo is an autonomous unit of Puerto Rico's Public Higher Education System. This University is an institution devoted to the production and diffusion of knowledge through teaching and research in the areas of the arts, sciences and technology. It imparts a quality university education that furthers the integral development of the students as professional and citizen. It offers a variety of academic programs supported by a network of student services and by a faculty that is committed to keeping abreast of developments in knowledge, in the different educational modalities and innovative strategies techniques to enhance the teaching and learning process.

The Institution promotes the interaction with the community by offering opportunities for professional improvement and continuing education. It promotes the social-cultural, enrichment, as well as the respect for the plurality of values of our contemporary society and the heritage as a legacy to future generations.

VISION

The University of Puerto Rico at Arecibo will be known for

- its attractive, up-to-date and innovative curricular offerings, particularly at the undergraduate level, although with an increasing number of graduate courses;
- learning and teaching processes focused on the interaction between students and faculty;
- research and dissemination by students and faculty;
- its interaction with the communities served;
- the recruitment and retention of students and faculty committed to learning, research and social transformations;
- an increasing offering of distance education.
- encouraging respect for the enrichment of our cultural heritage, diversity and plurality of values that characterize our contemporary society.

To accomplish this vision, the University of Puerto Rico at Arecibo will adopt modern procedures and technologies that promote the optimal use of institutional resources and will hire, train and equip the necessary support personnel to strengthen teaching, research, and student support and community services.

GOALS

The University of Puerto Rico at Arecibo, in implementing its mission, is committed to:

- Promoting the integral development of its students by enriching their intellectual, emotional, social and ethical values, so that they can attain self-fulfillment and actively contribute to the development of society.

- Stimulating in students their capacity for life-long learning, responsibility for their own growth, and awareness of their potential as a contributing members to the development of our country and of the international community
- Supporting research and creative endeavors.
- Fostering the application of the knowledge generated by the creative and investigative activities to the solution of society's problems
- Responding to society's changing needs by incorporating the advances in knowledge in the arts, the sciences and technology.
- Ensuring the efficient and effective use of the available human, fiscal and physical resources for the optimal development of the academic offerings.
- Making the Institution's physical and human resources available to the community.

OBJECTIVES

In order to attain these goals, the University of Puerto Rico at Arecibo aims to:

- Offer and develop programs of study conducive to bachelor and associate degrees that respond to the needs of the community which it serves and to the development of society.
- Offer basic studies programs in sciences and liberal arts that will allow students to successfully continue their studies towards a bachelor's degree when they transfer to other institutions of higher education.
- Offer a General Education component that will expand the students' intellectual horizons, that broadens their consciousness of and sensibility to their cultural heritage and international culture, and enables them to make critical judgments in situations within their areas of specialization, and in other areas.
- Offer a General Education component that includes the development of basic oral and written communication skills in both Spanish and English.
- Offer a curriculum that will develop critical analysis skills.
- Provide curricula that develop the skills to use and evaluate information and to use information technology in an ethical and legal manner.
- Offer programs and specific courses designed to help students overcome academic deficiencies and reach their educational goals.
- Offer, through the Division of Continuing Education and Professional Studies, short credit-bearing or non-credit courses, seminars, workshops, lectures and certificate courses that will respond to the interests of the university and external community.
- Provide counseling, orientation, financial aid and health services which facilitate the adjustment to college life, stimulate academic success and help our students become useful and responsible citizens.
- Maintain a high level of excellence in academic offerings through a faculty that is competent and up to date in their respective fields.
- Maintain a high level of excellence in academic offerings through the use of innovative teaching-learning methods and the efficient use of traditional library and electronic information resources.
- Develop academic and institutional research programs to strengthen and enrich teaching.
- Encourage active participation of students, faculty and administrative personnel in university endeavors.
- Promote interaction with the external community.

- Provide opportunities of cultural enrichment, and social and recreational entertainment, to the university and surrounding communities.
- Strengthen the professional improvement program to keep the Institution's personnel up to date in their respective fields.
- Establish a continuing assessment process for programs, academic offerings and administrative processes to keep them updated so they adequately meet the needs of the community which this Institution serves.

GOVERNANCE OF THE UNIVERSITY OF PUERTO RICO

GOVERNING BOARD

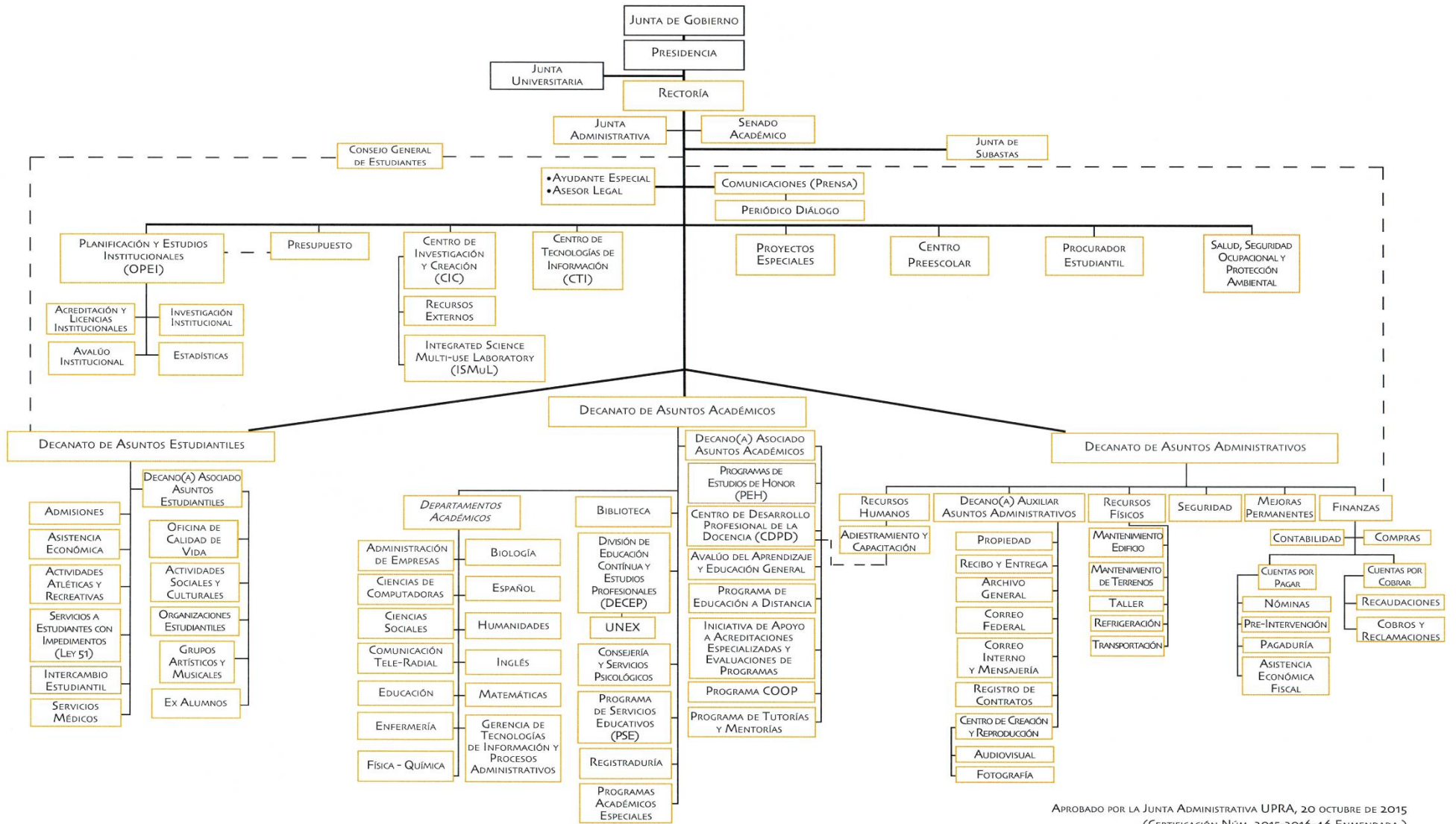
The Governing Board was created on May 2013 by the amendment of Law 1 of January 20, 1966, known as the University of Puerto Rico Law. The Board is composed of thirteen (13) members: ten (10) are citizens from the community, of which at least one must be a UPR alumnus; two (2) must be tenured professors in the UPR system, and one (1), a full-time student, who is at least a sophomore in the UPR system. The ten citizens from the community are appointed for six-year terms by the Governor of Puerto Rico, with the advice and consent of the Puerto Rico Senate.

PRESIDENT OF THE UNIVERSITY OF PUERTO RICO

The President is the Chief Executive Officer of the UPR System, its representative before the Governing Board, President of the University Board, Director of the UPR Central Administration Offices, representative before the courts, and ex-officio member of all Schools, Academic Senates and Administrative Boards of all UPR units.

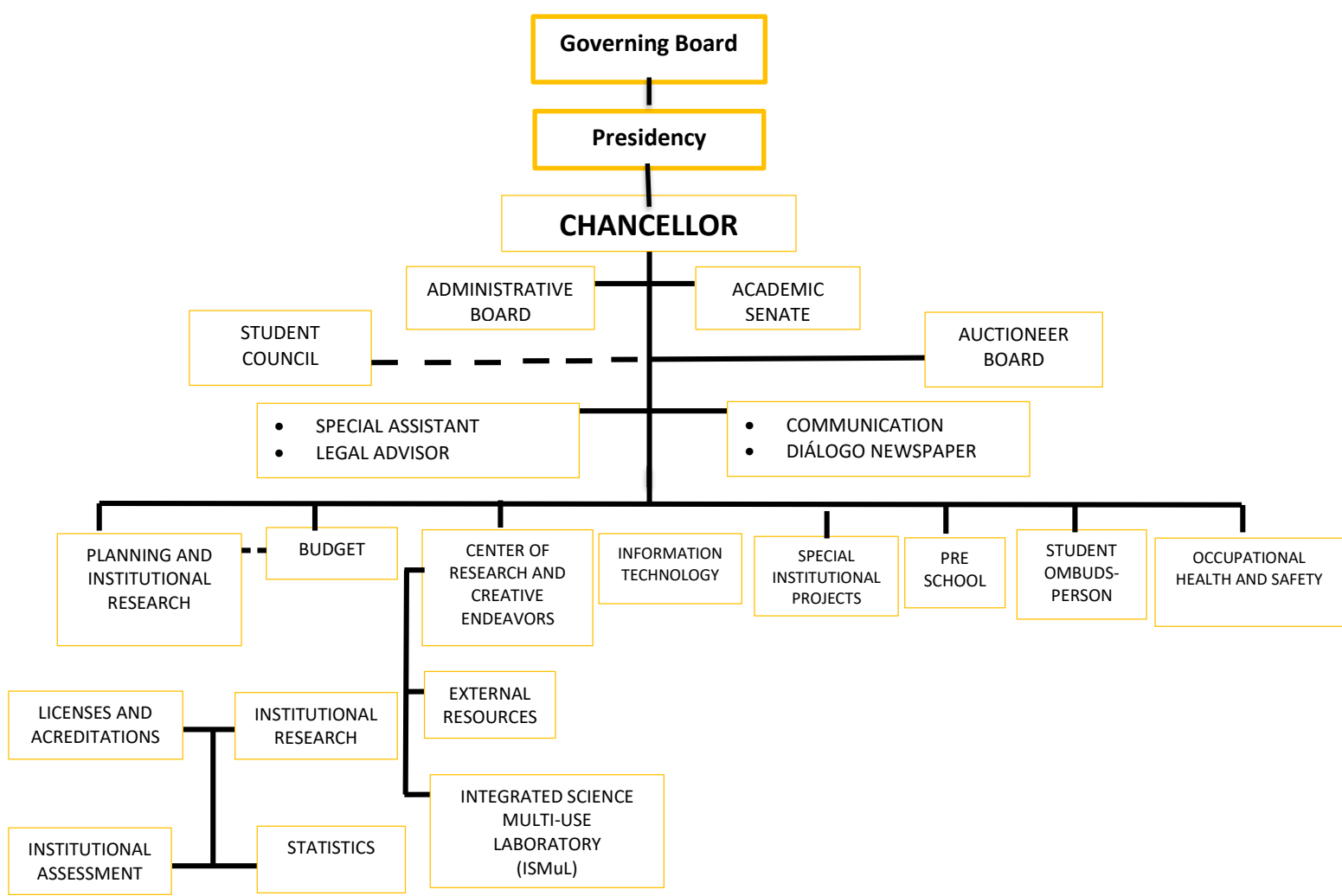
THE UNIVERSITY BOARD

The University Board maintains the integration of the UPR System by means of joint planning. It counsels the President in the coordination of the administrative, academic and financial aspects of the various institutional units. The University Board submits projects for the reform of UPR By-Laws and the General Student Regulations to the Board of Trustees. The Board makes recommendations pertaining to the Integral Development Plan and to the UPR System Budget. It also resolves appeals on the decisions of Administrative Boards and Academic Senates of the various UPR campuses.

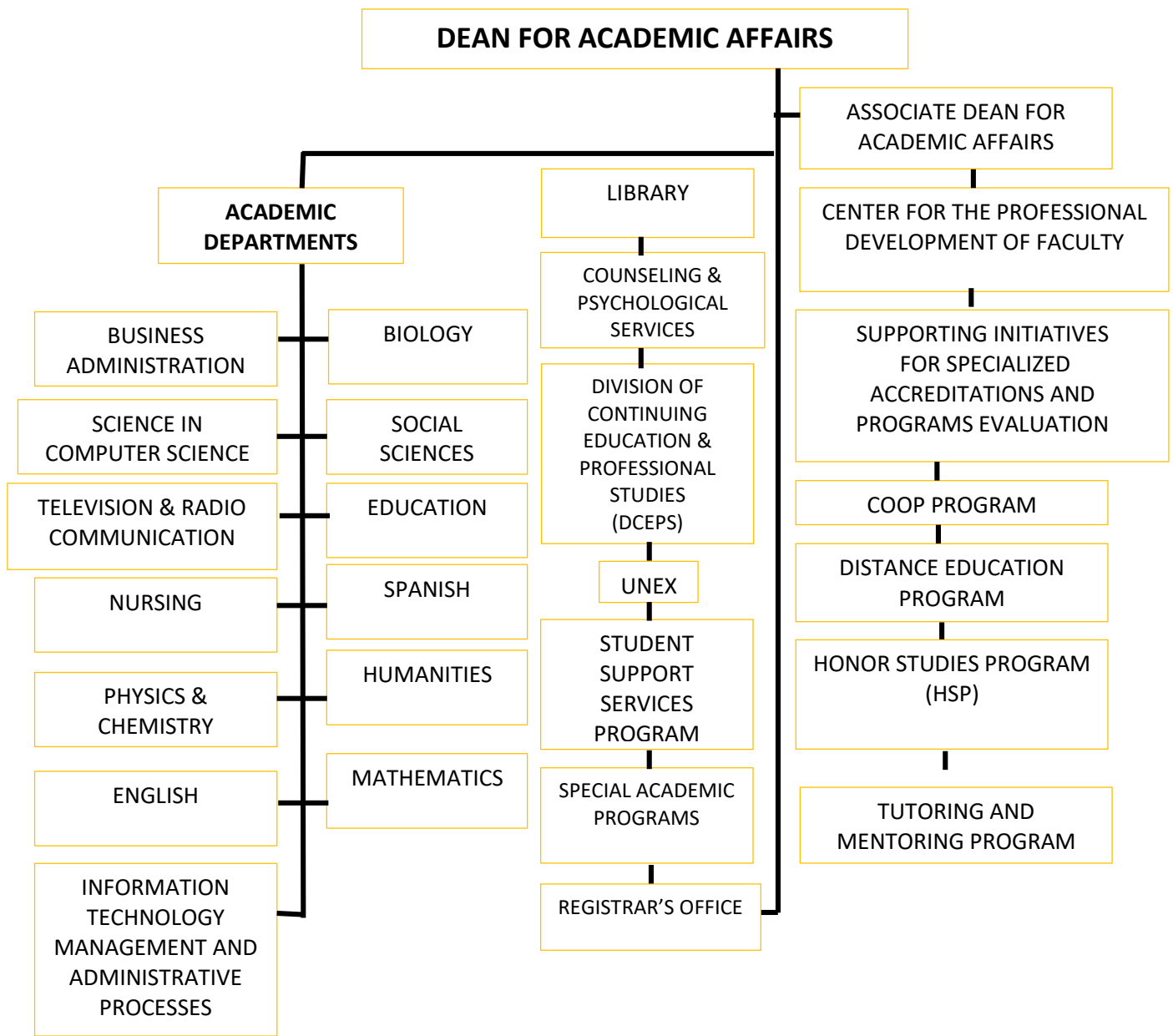


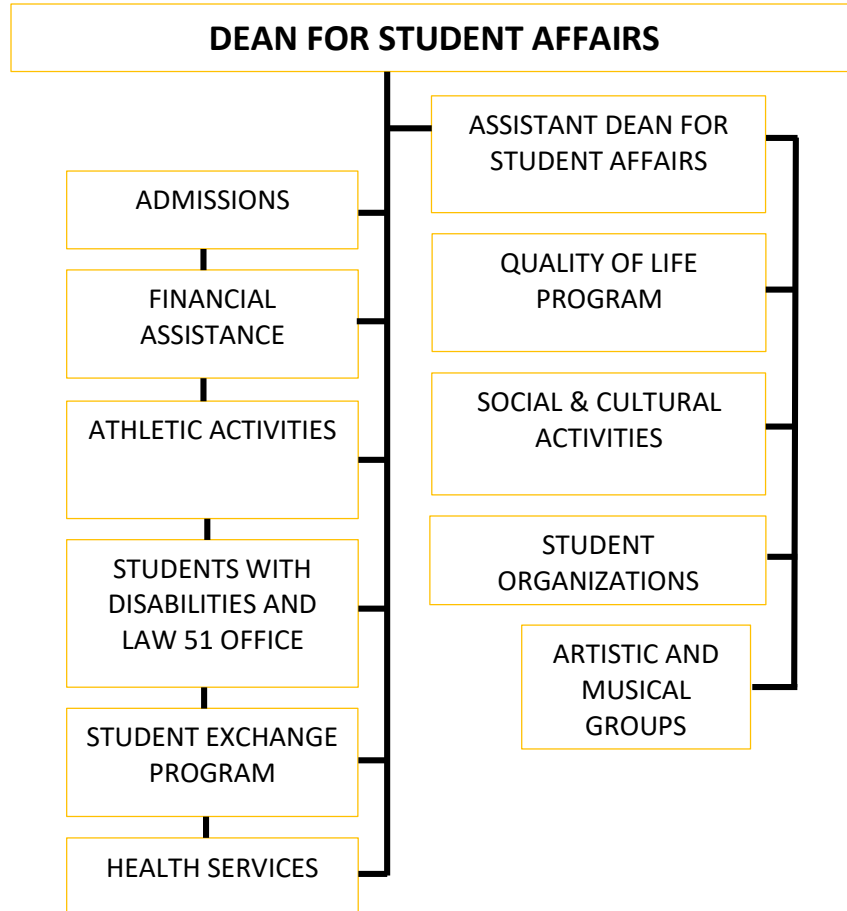
Aprobado por la Junta Administrativa UPRA, 20 OCTUBRE DE 2015
 (CERTIFICACIÓN NÚM. 2015-2016-46 ENMENDADA)
 Y ENMENDADA EL 3 DE SEPTIEMBRE DE 2019 (CERTIFICACIÓN NÚM. 2019-2020-08).

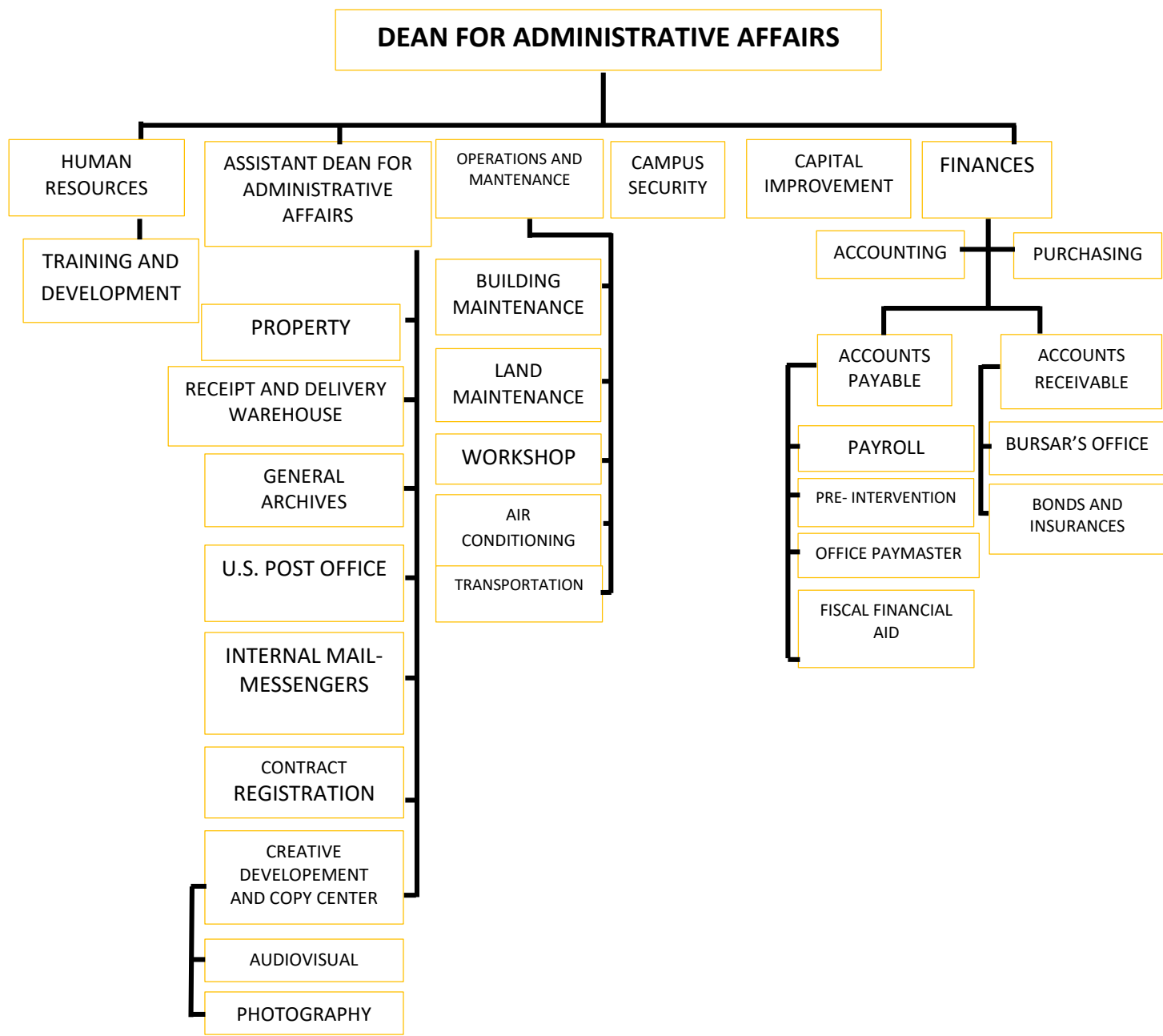
UPRA ORGANIZATIONAL CHART



Certification Number 2015-2016-46 of the Administrative Board
Certification Number 2019-2020-08 of the Administrative Board
amended on September 3, 2019







Certification Number 2015-2016-46 of the Administrative Board
Certification Number 2019-2020-08 of the Administrative Board
amended on September 3, 2019

UNIVERSITY OF PUERTO RICO AT ARECIBO

DR. CARLOS A. ADNÚJAR ROJAS	Chancellor
DR. WEYNA QUIÑONES CASTILLO	Dean for Academic Affairs
DR. INOCENCIO RODRÍGUEZ GONÁLEZ	Dean for Administrative Affairs
DR. JOSE C. COLÓN RODRÍGUEZ	Interim Dean for Student Affairs
DR. GEISSA TORRES SANTIAGO	Director of the Office for Planning and Institutional Research
DR. ELIZABETH CORTÉS PÉREZ	Associate Dean for Academic Affairs

ADMINISTRATIVE BOARD

DR. CARLOS A. ANDÚJAR ROJAS	Chancellor
DR. WEYNA QUIÑONES CASTILLO	Dean for Academic Affairs
DR. INOCENCIO RODRÍGUEZ GONÁLEZ	Dean for Administrative Affairs
DR. JOSE C. COLÓN RODRÍGUEZ	Interim Dean for Student Affairs
DR. MARILYN RÍOS SOTO	Chair, Department of Spanish
PROF. JULIO E. BERRA PÉREZ	Chair, Department of Mathematics
PROF. JOSÉ G. ARBELO GARCÍA	Representatives of the Academic Senate
PROF. AIXA RAMÍREZ TOLEDO	Representatives of the Academic Senate
DAVID GALINDEZ PÉREZ	Student Representative

ACADEMIC DEPARTMENTS

DEPARTAMENT	CHAIRPERSON
Biology	PROF. SONIA REYES MEDINA
Business Administration	DRA. BRENDA LIZ PÉREZ PÉREZ
Computer Science	PROF. JUAN O. LÓPEZ GERENA
Education	PROF. MERYLIN MARTÍNEZ FELICIANO
English	DR. GEISSA R. TORRES SANTIAGO
Humanities	PROF. JOAMEL SOTO GONZÁLEZ
Library	PROF. VÍCTOR MALDONADO MALDONADO
Mathematics	PROF. JULIO E. BERRA PÉREZ
Nursing	DR. RAÚL E. JIMÉNEZ CARRIÓN
Information Technology Management and Administrative Processes	DRA. KAREN MORALES SOTO

Orientation and Psychological Services
 Physics-Chemistry
 Television and Radio Communication
 Social Sciences
 Spanish

PROF. CELIA R. MEDINA MÉNDEZ
 PROF. ÁNGEL ACOSTA COLÓN
 PROF. JOSÉ L. SOTO COLÓN
 DR. GABRIEL ALEMÁN RODRÍGUEZ
 DR. MARILYN RÍOS SOTO

OTHER ACADEMIC OFFICES

Continuing Education and Professional
 Studies
 Registrar's Office
 Student Support Services

MRS. LOURDES A. ROSA MONTIJO

 MRS. IGMARIE SOTO BARRETO

ACADEMIC SENATE

DR. CARLOS ANDÚJAR ROJAS
 DRA. WEYNA QUIÑONES CASTILLO
 DR. INOCENCIO RODRÍGUEZ GONZÁLEZ
 DR. JOSÉ C. COLÓN RODRÍGUEZ
 PROF. VÍCTOR MALDONADO MALDONADO,
 ex officio
 MS. PAOLA N. RIVERA RODRÍGUEZ
 MR. LUIS M. JIMÉNEZ VÁZQUEZ
 MR. DAVID A. GALINDEZ PÉREZ

 PROF. JOSÉ G. ARBELO GARCÍA
 DRA. NAYLA BÁEZ ROMÁN
 PROF. ROBERTO TORRES LÓPEZ
 PROF. AIXA RAMÍREZ TOLEDO
 DRA. ELBA J. GUZMÁN FARIA
 DR. JOSÉ F. JIMÉNEZ ESTREMER
 DRA. MARISOL SANTIAGO PÉREZ
 PROF. FERNANDO MEDINA CASTILLO
 PROF. JADIRA MALDONADO RIVERA
 PROF. ANNELIESSE A. SÁNCHEZ ZAMBRANA

 PROF. VANESSA VÉLEZ ROMÁN

 DRA. ANILYN DÍAZ HERNÁNDEZ
 DRA. MARTHA QUIÑONES DOMÍNGUEZ
 DRA. ROSA DEL C. GONZÁLEZ MUÑIZ

Chancellor
 Dean for Academic Affairs
 Dean for Administrative Affairs
 Interim Dean for Student Affairs
 Library Director

 President of the Student Council
 Student Representative to the University Board
 Student Representative to the Administrative
 Board
 Biology
 Business Administration
 Physics-Chemistry
 Computer Science
 Counseling and Psychological Services
 Education
 English
 Humanities
 Library
 Mathematics
 Nursing
 Information Technology Management and
 Administrative Processes
 Television and Radio Communication
 Social Sciences
 Spanish

THE CHANCELLOR

The academic and administrative authority of the each UPR campus rests on the Office of the Chancellor. The Chancellor of the University of Puerto Rico at Arecibo oversees the Academic Senate, the Administrative Board and Faculty meetings. He/she has the authority to appoint, in consultation with the Academic Senate and the Faculty, the deans, the department chairpersons and office directors, university personnel, visiting professors and other types of visiting personnel.

The Chancellor rules on appeals to decisions made by the three deans. He/she represents UPRA in events, ceremonies and academic events. He/she formulates UPRA's budget project based on recommendations by the Administrative Board and other UPRA offices, and submits the proposed budget to the President of the UPR and submits an annual report of the activities at the University of Puerto Rico at Arecibo to the Governing Board.

OFFICE FOR PLANNING AND INSTITUTIONAL STUDIES

UPRA's Office of Planning and Institutional Research (OPIR) was created in the 1980-81 academic year. The Office is attached to the Chancellor's office. Its mission is to present evidence of the Institution's effectiveness in achieving its mission, goals and objectives. Through its endeavors, it supports and strengthens the academic and managerial affairs of the Institution, seeking to improve processes and facilitate strategic decision-making.

OPIR gathers and interprets data from the Institution and from the external community to help draft the plans that will guide the university as it seeks to meet its goals and objectives. Personnel from OPIR advises the university management in matters of physical, academic, programmatic, fiscal and professional matters, based on the internal and external conditions that will impact the implementation of action plans. The main functions of OPIR are listed below:

Planning consists in the gathering and analysis of not only institutional data, but also of data from the external community that bears of the present and future functioning of the University. Taking into account internal and external conditions that will affect the implementation of action programs to achieve the proposed objectives, OPIR advises on physical, academic, programmatic, fiscal and professional matters.

- **Planning**

OPIR coordinates the efforts dealing with institutional strategic planning. It continuously monitors and evaluates the results of the strategic plan. It also provides support to the various dependencies of UPRA in relation to the optimal budget allocations and in the identification of strategies for academic, physical and fiscal planning. As part of strategic planning, OPIR directs the process for setting academic and administrative priorities, and ensures that these priorities are in line with the budgetary distribution and the institutional indicators of effectiveness.

- **Assessment**

This office promotes institutional excellence through a continuing process of assessment guided and organized through an Institutional Assessment Plan. The Plan includes the four areas of assessment: learning, other academic activities, student services and administrative processes. These activities are coordinated by an Institutional Assessment Committee. This committee ensures the implementation of the Institutional Assessment Plan and submits a yearly assessment report, which includes the excellence indicators included in this plan, which provide evidence about institutional effectiveness. OPIR and the Assessment Committee are also charged with the continuous dissemination of the results of the institutional assessment process.

- **Institutional Research**

This office identifies information needs and designs and conducts institutional studies to meet these needs. Personnel from OPIR coordinate the gathering and distribution of surveys and designs samples. The office maintains a continuous and systematic process for gathering data, which includes follow-up studies of incoming freshmen, second and third year students, graduates and alumni, which shed light on many of the academic and service activities. OPIR also identifies standards for benchmarking academic and administrative practices by comparing them to similar institutions. This area designs studies and research projects with the purpose of facilitating the decision-making process of the Institution. The institutional research projects support the planning, assessment and decision-making processes.

- **Statistics**

This office is responsible for collecting, presenting and disseminating statistical data related to university matters. It is also charge with the completion of questionnaires and fulfilling data requests by state and federal agencies and providing statistical data requested by the academic community.

- **Accreditation**

This office attends matters related to accreditation and licensing. It coordinates institutional efforts for the process of accreditation by the Middle States Commission on Higher Education and by Puerto Rico's Council of Higher Education of Puerto Rico. It contributes to the evaluation of the different programs and offices by keeping an extensive file of all essential institutional information required by accrediting agencies. It collaborates in professional accreditation for academic programs and services.

- **Institutional Planning**

Its primary function is to accomplish the continuing institutional strategic planning so that it serves as a working tool for decision-making, for assessment and for future planning. It supervises the decision-making process in the Institution, that it be based on the critical areas, the objectives and priorities stated in the Institution's Strategic Plan.

OFFICE OF THE DEAN FOR ACADEMIC AFFAIRS

The Office of the Dean for Academic Affairs is the administrative unit in charge of coordinating the processes pertaining to academic departments and programs. Its main function is to formulate the official directives that guarantee the well-functioning of the academe. As an administrative unit, this Office is constituted by the Dean for Academic Affairs, the Associate Dean and two administrative officers.

Staff from this office, coordinates and supervises academic initiatives, furthers academic excellence by diversifying offerings and strengthening programs, supports academic research in the areas of sciences, humanities and education so that the content and methodology of courses can be continuously updated, encourages new academic proposals, and evaluates existing academic programs.

The Office of the Dean for Academic Affairs includes a Faculty Personnel Committee, thirteen (13) academic departments, the Library, the Division of Continuing Education and Professional Studies, and the Registrar's Office. The Associate oversees Admissions, Special Academic Programs, the Tutoring and Mentoring Center, the Honors Program, Student Support Services Program, the Distance Education Program, and the Faculty Improvement Center.

OFFICE OF THE DEAN OF STUDENT AFFAIRS

The Office of the Dean for Student Affairs is the administrative unit that manages, coordinates and supervises a variety of programs and services for the students of this university.

The following offices are overseen by this Office: Counseling, Financial Aid, and Medical Services. It also provides a Student Center, Student Organizations, Music Groups, a Child-care Program, a Student's Ombudsman, and an Office for the Affairs of Persons with Disabilities, Identification Cards, Career Center, and the Quality of Life Office, and the Student Exchange Program.

The Office of the Dean for Student Affairs is in constant communication with public and private agencies and organizations which help the Institution offer better services to students. It also maintains close communication with the Offices of the Deans of Academic and Administrative Affairs in order to coordinate services effectively and efficiently.

OFFICE OF THE DEAN FOR ADMINISTRATIVE AFFAIRS

The Office of the Dean for Administrative Affairs provides support and service to all of UPRA's community, that is, students, faculty and administrative personnel.

This Office is constituted by the following offices: Finance, Operation and Maintenance, Security and Surveillance, Capital Improvements and other General Services, Federal and Internal Mail Service, Human Resources and General Archives.

The tasks performed by these offices include security, personnel actions, fiscal operations, purchases and supplies, operations and maintenance of all facilities, as well as dealing with the logistics of all academic and student activities.

ADMINISTRATIVE BOARD

This body advises the Chancellor on the exercise of functions pertaining to the responsibilities of the post, makes plans and projects for development, considers the Institution's projected budget, and awards, upon the Chancellor's recommendations, leaves, academic ranks, tenure and promotions to the teaching and non-teaching personnel in accordance with the General University By-Laws.

ACADEMIC SENATE

The Academic Senate is the official forum of the academic community, where the general problems affecting the Institution are discussed. It is composed of the Chancellor, the Dean for Academic Affairs, the Dean of Administrative Affairs and the Dean of Student Affairs, the Director of the Library, elected faculty representatives, and student representatives.

The Academic Senate determines the general orientation of academic programs and establishes the institutional policy on research. It also establishes the general norms for hiring, tenure, promotion in rank and leaves of faculty, and the general requirements for admission, promotion and graduation of students. Furthermore, it makes recommendations to the Board of Trustees on the creation or reorganization of dependencies at UPRA, and for the creation and award of academic honors. It makes recommendations to the University Board about projects, and amendments to the General University By-Laws and the General Student Regulations.

STUDENT COUNCIL

Students are an essential part of the university community. Their rights and duties are defined in the General Student Bylaws. Students are represented before the university administration by the Student Council. Furthermore, there are student representatives in all directive bodies.

The Student Council fosters communication among students, faculty and non-teaching personnel. The Student Council aims to make students aware of rights, privileges, duties and obligations. Furthermore, it encourages the student community to maintain institutional order. Student Council representatives are elected according to the procedures established in the Student Bylaws.

The Student Council has the following attributions and responsibilities:

- serve as the official representative of the student body
- present before the corresponding authorities all problems affecting the student community
- promote student activities

- strive to create an intellectual atmosphere to promote student development
- contribute to improve communication among the various components of the college community.

COMPENDIUM OF INSTITUTIONAL POLICES

The University of Puerto Rico at Arecibo complies with all applicable Federal and state laws and with UPR system regulations. The Institution does not discriminate on the basis of gender, color, place of birth, age, physical or mental handicap, origin, social condition, religious or political convictions in any and all the activities or programs sponsored by the UPR system. UPRA has two documents that regulate its governance and organization, *the General University Bylaws* and the *Student Regulatory Handbook* that spells out students' rights and obligations in all aspects of institutional life. Copies of these regulations are available at the Office of the Dean of Students.

STUDENTS' RIGHTS AND OBLIGATIONS

The fundamental right of a student of the University of Puerto Rico is the right to receive an education. This right is not limited to formal activities in the classroom, but also encompasses the totality of the student's interaction with other students, professors, researchers, university administration and the rest of the community. The student's primary obligation is to exercise this right to the fullest, and to behave in such a way that allows the other members of the university community to equally exercise their rights and comply with their obligations.

The *General Student Regulatory Handbook* includes the rights and obligations of students relating to academic life, to participation in aspects of institutional life, complementary institutional services, academic norms, sanctions to be applied when a violation of the norms occurs, and the procedure for their application.

A new *Student Regulatory Handbook* was recently approved by the UPR Governing Board is already in effect.

STUDENT OMBUDSMAN

Certification Number 119-2014-15 of the UPR Governing Board regulates the appointment and evaluation of a Student Ombudsperson, as well as its duties.

RIGHTS AND OBLIGATIONS IN THE STUDENT- PROFESSOR RELATIONSHIP

(UPRA Academic Senate Certification 2006-07-27 as Enmended)

Course related work is the focal point of the student-professor relationship. Instructors shall foster creative dialogue and freedom of expression in the students. Students shall have the opportunity to present fundamental objections to the data and opinions presented by their professors. Each one shall examine aspects of the discipline according to the norms of intellectual responsibility proper to academic labor. Neither shall use the classroom as a forum to preach political, sectarian, religious or other doctrines foreign to course content. The right to dissent does not relieve students of the responsibility of fulfilling a course's requirements.

Students will be evaluated on the basis of their academic performance.

The fiduciary nature of the student-professor relationship shall be honored by both, and by the university administration. The opinions and beliefs expressed by students in the classroom are privileged and students have the right to expect that professors do not divulge them to third parties. This shall not impede professors from stating their opinion about the students' character and abilities, or from discussing the students' academic performance and formative progress with colleagues.

Certification 2006-07-27 as amended by the UPRA Academic Senate defines the student-professor relationship in class, and establishes, among other things, the following:

- During their first week of class students will receive an orientation about the material to be discussed in the course and the evaluation criteria to be used. The evaluation criteria should be handed in to the students by the professor. These will not be arbitrarily altered or modified by the course professor. If changes need to be made to the evaluation criteria used in class, the professor should discuss these with the students.
- Every course has a syllabus developed by the corresponding academic departments. The professor may also provide the students with a summary which includes his or her office hours, textbooks to be used and a bibliography, among other information.
- **Class time:** A one hour class equals 50 minutes of lecture time. The remaining 10 minutes allow the students to move from one classroom to another. Two or more hour classes equal an hour and 15 minutes of lecture, providing 5 minutes for the students to move from one classroom to another.
- **Exams and grades:** Professors will grade exams and classwork in a period no longer than three weeks.
 - Exams and quizzes will be announced with at least three days. The course syllabus might also include unannounced quizzes.
 - The student has the possibility to know his/her grades before the scheduled time to withdraw. 50% of the evaluation weight should have been administered, corrected, and informed previous to the partial withdrawals date in the case of regular students.
 - In the case of students' claims, the professor must provide evidence of the student's grades. The professor must also keep evidence of these grades until the date scheduled for changing grades; one semester after the course was given.
 - Students are not obliged to take exams or classes scheduled at a time different from the one established by the department. Departmental exams are the only exception for a class to meet at a different time. Changing the time of a class can only be made through a unanimous decision between students and the professor.
 - In case of absence, the professor may schedule a class makeup by agreement with the majority of the students present. Those students who cannot be present during the scheduled class makeup will have the opportunity to meet at another time in agreement with the class professor.
 - Final exams are administered during the day and time assigned by the Registrar's Office.
 - Students will not have any academic obligation during the days assigned for class review scheduled before final exams.
 - Professors may indicate their absences, those permitted with a reasonable excuse,

in the tentative schedule included with the syllabus. They will also explain to the students how absences can affect their grade.

The student-professor relationship outside the classroom is part of the educational process. Students will have the right to meet with their professors at hours reserved for this purpose to seek orientation and discuss aspects of their academic work

Students' academic and disciplinary dossiers will be kept separate from each other. The information in the disciplinary dossier shall not be available to non-authorized persons from within or outside of the university without the students' consent, except in the case of a judicial ruling. Students' political beliefs will not be recorded anywhere.

EQUAL OPPORTUNITIES

The University of Puerto Rico guarantees equal opportunities to its students, employees and prospective students or employees. Likewise, the Institution guarantees equal opportunities in the enjoyment of academic programs and services, as well as in the terms and conditions of employment. The University does not exclude nor withhold benefits or discriminate against any person by reason of age, race, origin, social condition, physical or mental disabilities, nor for political ideas or religious beliefs. In case that a student, employee or prospective student or job candidate feels that they have been discriminated against by any of the aforementioned reasons, the individual can file a written grievance with the official designated to receive it.

The establishment and compliance with this policy, as well as its publication, comply with the Title IX Federal Regulations, 1972 Educational Amendments, Section 504 of the 1973 Rehabilitation Law, and with the American with Disabilities Act (ADA) of 1992.

STUDENTS' HEALTH INSURANCE

It is the policy of the Institution that all students subscribe to the health insurance contracted by the University of Puerto Rico, unless students provide evidence of being covered by a private, family or individual health plan. More information is available in the office of Health Services.

SEXUAL HARASSMENT

Sexual harassment in the workplace and in the academic field is an illegal and discriminatory practice, harmful to institutional interests. The University of Puerto Rico will not permit sexual harassment in the Institution, regardless of the hierarchy or position held by the persons who might be involved Under no circumstance will any persons be allowed to conduct themselves in any way that might be construed, directly or indirectly, as sexual harassment or sexually discriminatory practices in the administrative or academic workplace.

The legal basis for the Institutional Policy on Sexual Harassment is PR Commonwealth Law No.17 of April 22, 1988. The Institutional Policy on Sexual Harassment is based on the following precepts:

1. Sexual harassment can occur between people of the same sex and people of different sex.
2. No person is obliged to permit, accept, submit to or tolerate unwelcome acts or insinuations of a sexual nature.
3. Sexual harassment consists of any type of unwelcomed sexual approach, requirement for sexual favors, or physical or verbal behavior of a sexual nature when this conduct is present in one or more of the following circumstances:
 - When submitting to such conduct is implicitly a condition for employment or the study environment.
 - The submission to or rejection of such conduct is the basis for decision making in the place of employment or for academic evaluation.
 - If such conduct has the effect or purpose of unreasonably interfering with the performance of work or academic labor.
 - If such conduct creates an intimidating, hostile or offensive environment

To suspend, deny employment, fire; deny, withhold an examination, withhold grades, or deny approval of an examination, grades, or papers or in any other way affect a person by reason of the person's sex or circumstances or conditions inherent to the person's sex is an illegal practice.

The Institution has the obligation to investigate claims of sexual harassment committed inside the Institution by persons who are not members of the university community and take appropriate action, within the bounds of its control, with the accused. Moreover, the Institution shall take any other appropriate legal action required. To determine if the conduct denounced constitutes sexual harassment, the totality of the circumstances surrounding the alleged act will be taken into account. Examples of inappropriate conduct are flirtatious remarks, sexual insinuations, lustful looks, commentaries or jokes with a sexual tone, kisses, groping, sexual aggressions and the creation of an intimidating, hostile and offensive environment, among others.

Claims

A person who has been the victim of sexual harassment may seek help, personally or in writing from the following officials: the Labor Delegate, the Department Chairpersons, the Dean of Student Affairs, the Dean for Academic Affairs, the Students' Ombudsperson, the Director of Human Resources or the University's legal consultant.

PRIVACY OF ACADEMIC RECORDS

The University of Puerto Rico, in compliance with the Family Educational Rights and Privacy Act of 1974, as amended, affirms the following precepts:

1. Students have the right to examine their academic record.
2. Students have the right to ask for amendments to their records to correct data that might be wrongly understood, or that violate their right to privacy or other accorded rights.
3. Students' consent is necessary before divulging any information of their academic record.
4. Students have the right to file a grievance against the University of Puerto Rico for alleged violations of the aforementioned conditions.

Claims related to the violation of the right to privacy must be filed at:

Family Policy Compliance Office
U.S. Department of Education
600 Independence Avenue, S.W.
Washington, DC 20202-4605

CAMPUS SECURITY AT THE UNIVERSITY OF PUERTO RICO

The University of Puerto Rico recognizes the protection of the life and security of its members and the prevention of criminal acts within its grounds as legitimate institutional interests. The Institutional Policy on Campus Security agrees with Public Law 101-542 known as the Students Right to Know and Campus Security Act and other Federal and state laws that require the existence of specific institutional norms to this effect. This policy's objective is to promote and maintain a study and work environment secure, free of risks, violent acts and danger. It also recognizes the right of students, of prospective students and employees, and the community in general, to receive information of criminal acts that have occurred inside the university grounds and adjacent areas.

Any persons who by their actions, or by omission, violate state or federal regulations will be subjected to the disciplinary measures stated in the university regulations. They can also be indicted of a crime according to the applicable state and federal laws.

The University of Puerto Rico prepares and publishes an annual report called *Security Handbook* which includes institutional policy, procedures, sanctions, student services, security measures, emergency telephones and statistics on campus crime. Copies of this handbook are available at the Office of the Dean for Student Affairs and at the Office of the Dean of Administrative Affairs.

ILLEGAL USE OF DRUGS AND ALCOHOL ABUSE

The use of drugs and the abuse of alcohol are harmful to the well-being and development of human beings, having a negative impact on the biological, social, psychological and spiritual functioning; these reduce the capacity for learning and practicing the knowledge attained, besides compromising the person's physical security and that of his/her fellow students.

The University of Puerto Rico, aware of the seriousness of the problem that the possession, distribution and use of drugs, and the abuse of alcohol constitute for the Puerto Rican and university communities, has the firm goal of fostering a healthy environment for study and work and promoting positive attitudes that lead to integral health, and that contribute to a social environment that is favorable to the intellectual, physical and emotional wellbeing of the community.

The Institutional Policy and the Regulations on the Illegal Use of Drugs, Controlled Substances and Alcohol Abuse are adopted in agreement with the applicable dispositions of Article I of the Law of the University of Puerto Rico, as amended, and in agreement with Article 14, Section 14.10.13 of the General Regulatory Handbook of the University of Puerto Rico. It is also based on the Law of Drug-free Workplaces, 1988, 41 U.S.C.A. 1011 h y 1011 i, as amended, and the

regulations adopted by the US Department of Education to implant the said laws, 34C. F. R. parts 85 and 86; C.F.R., sub part 23.5.

In accordance with this legislation, that establishes the affirmative responsibility of educational institutions toward their students and employees to prevent and penalize the illegal use of controlled substances and alcohol abuse within the university grounds and in activities sponsored by the University of Puerto Rico, the University adopted an vigorous policy on the illegal use of drugs, stated in Certifications No. 032 and 033, 1999-2000 Series of the Board of Trustees. The goal of this policy is to effectively prevent, within the Institution and in official activities outside, the manufacture, distribution, possession and use of illicit controlled substances, and also the abuse of alcohol. Both Certifications apply to the whole university community. It is the responsibility of all, with no exceptions, to comply with the norms therein established.

NO-SMOKING POLICY (P.R. LAW 40)

In accordance with the P.R. Commonwealth Law 40, August 3, 1993, 24 L.E.P.R.A. Section 892, that forbids smoking in enclosed spaces such as classrooms, auditoriums, libraries, museums, corridors, cafeterias and restrooms, the University of Puerto Rico prohibits smoking in such places. Persons who desire to smoke may do so in areas such as parking lots, balconies or open terraces.

ENVIRONMENTAL POLICY

The University of Puerto Rico in complying with its responsibilities to the community, and as an agent for social change is firmly committed to assume a leadership position in solving the existing environmental problems by proposing concrete alternatives to their solution.

The following are the objectives of the UPR Environmental Policy:

1. Implementing the Commonwealth of Puerto Rico's Environmental Policy, adapted to the institutional reality, and serve as a model for the implementation of this policy.
2. Establishing forums for the discussion of environmental problems relevant to Puerto Rico, the Caribbean, and the world.
3. Contributing ideas and participate in the public discussion of environmental problems.
4. Designing methods to comply with the environmental protection laws and regulations applying to the University of Puerto Rico.

POLICY FOR THE ACCEPTABLE USE OF INFORMATION TECHNOLOGY RESOURCES THROUGH THE UNIVERSITY OF PUERTO RICO

The Board of Trustees of the University of Puerto Rico's Certification No. 35 2007-2008 Series establishes the institutional policy to ensure the appropriate use of information and telecommunication technologies by the university community, the persons servicing the University of Puerto Rico, external clients and users of the University's information and telecommunication systems. This system-wide

(Certificate No. by the Board of Trustees)¹ applies to all users of the University of Puerto Rico's Information Technology (IT), including but not limited to students, faculty, researchers, and staff. Third parties who use any part of the University's Information Technology are also subject to this Policy, including when they connect proprietary equipment to the University network or install proprietary software on University computers. Unawareness of the existence of this Policy, or of any part of this Policy, does not excuse users from its compliance.

This Policy aims to achieve the following:

1. Safeguard the integrity of computers, computer-related equipments, networks,
2. systems, programs, and data, regardless of whether or not these are located on
3. University grounds;
4. Ensure that use of electronic communications complies with applicable
5. University, Commonwealth, federal and international laws, policies, norms, and
6. procedures;
7. Protect the University against damaging security and legal consequences.

Policy Statements

It recognizes that computers, networks (including wireless networks), and electronic information systems are essential resources for accomplishing the University of Puerto Rico's mission of instruction, research, and service outreach. The University grants members of the University community shared access to these resources - as well as to local, national, and System-Wide Policy for the Acceptable Use of Information Technology Resources international sources of information - in support of accomplishing the University's mission. These resources are a valuable community asset to be used and managed responsibly to ensure their integrity, security, and availability for appropriate educational, research, service, and other institutional activities. Users are required to use IT resources effectively, efficiently, and responsibly; in a manner that does not affect the quality, timeliness, or delivery of a person's work to the University nor hamper the rest of the community's ability to conduct their work for the University.

Freedom of expression and an open environment for learning and sharing information are valued, encouraged, supported, and protected at the University of Puerto Rico. Censorship is incompatible with the goals of an institution of higher education. Research and instruction take many forms. Therefore, information accessible from available electronic sources may not be restricted through censorship, as long as this information is not constrained by law or regulations and it is used for lawful purposes. The University will promote the appropriate use of technology, mainly through education, to encourage responsible management of technology and the information that is accessed. Access to the information resource infrastructure both within and outside University grounds, sharing of information, and security of intellectual products, all require that every user accept personal responsibility for protecting the rights of the community. Users should be aware that actions conducted using information technology will be held to the same standards as any other action in the work place. The University will deal promptly with all violations of any law or university policy.

¹ The Policy is formulated in compliance with all applicable dispositions of the University of Puerto Rico Act, Law No. 1 of January 20, 1966, as amended, and the General Regulation of the University of Puerto Rico. The complete document can be found in the following e-mail address: <http://www.certifica.upr.edu/certificaciones/External/Certificaciones.aspx>

User's Rights and Responsibilities

As part of the User's Rights and Responsibilities, members of the University community are granted access to information technology resources in order to facilitate their University-related academic, research, service, and job activities. Occasional personal use of information technology is allowed, as long as this personal use does not interfere with job performance nor violate any existing policy, regulation, or law. Assessment of an employee's job performance may consider the employee's personal use of information technology resources; and a supervisor may request a change in this personal use as a condition for continued employment, if deemed necessary.

A. Use Means Acceptance of Policy and Norms

By using the University's information technologies, users agree to abide by this Policy, as well as all relevant University policies, norms, and procedures, and current federal and Commonwealth laws. Users are responsible for the following tasks:

1. Review, understand, and comply with all policies, procedures and laws related to access, acceptable use, and security of University information technology resources;
2. Request system administrators or data custodians for clarification on access and acceptable use issues not specifically addressed in University policies, regulations, standards, and procedures; and
3. Report possible policy violations to the appropriate entities.

B. Privacy and Security Awareness

The University recognizes the user's right to privacy and security; and will take reasonable measures to protect the security of the information technology resources assigned to individual users. The user's personal information will be maintained in a secure environment; and only accessed by authorized employees that need the information to do their job. Should the need arise to intervene with a person's right to privacy in the course of any investigation regarding inappropriate use of information or technology resources, the University will do so following existing legal procedures. Users should follow the appropriate security procedures to assist in keeping equipment, systems, applications, and accounts secure. These procedures are available through the System or Campus Information Systems Offices (ISO).

C. Consequences of Violations

Access privileges to the University's Information Technology resources will not be denied without cause. The University may temporarily deny access to these resources if, during the course of an investigation, it appears necessary to protect the integrity, security, or continued operation of its computers, systems, applications, and networks or to protect itself from liability. Alleged violations of University IT policies shall be referred to appropriate University officials for resolution or disciplinary action. The University may also refer suspected violations of the law to the appropriate law enforcement agencies. Depending upon the nature and severity of the offense, policy violations may result in loss of access privileges, University disciplinary action, and/or criminal prosecution.

The University's Rights and Responsibilities

The University owns the applications, systems, computers, and networks that comprise the University's technical infrastructure. Likewise, the University owns all data that reside on this technical infrastructure; and is responsible for taking the necessary measures to ensure the integrity, security, and confidentiality of its systems, applications, data, and user accounts.

When the University becomes aware of violations, either through routine system administration activities, audits, or from a complaint, it is the University's responsibility to investigate as needed or directed, and to take whatever necessary actions to protect its resources and/or to provide information relevant to any investigation underway. University offices, campuses, faculties, and facilities shall cooperate and work alongside appropriate University and law enforcement officials investigating these violations.

PROCEDURES: ADMISSIONS, REGISTRAR, BURSAR & COMPLAINTS

ADMISSION PROCESS

REQUIREMENTS FOR REGULAR ADMISSIONS

ADMISSIONS POLICY AND REGULATIONS (UPR BOARD OF TRUSTEES CERTIFICATION 25-2003-2004)

Admissions Requirements for High School Students

Any graduate from an accredited high school or its equivalent who has never pursued college level courses must submit an admission application in order to be admitted to the University of Puerto Rico at Arecibo. The admission application is only valid for admission for the fall semester. All submitted documents become the property of the University of Puerto Rico at Arecibo.

Candidates for admission must meet the following criteria:

1. Hold a high school diploma, or its equivalent, conferred by an educational institution duly accredited by the Puerto Rico Department of Education. Applicants who have taken the equivalency examination, English version (GED), should request the conversion of the results and a grade report from the Department of Education.
2. Have taken the College Entrance Examination within the five years prior to the application.
 - a. All applicants must take the Academic Aptitude tests (Math and Verbal skills) and the Achievement Tests in Mathematics, English and Spanish offered by the College Entrance Examination Board (CEEB). These tests are offered in June, October and February.
 - b. Applications for the CEEB exam may be obtained from the College Entrance Examination Board, Call Box 71101, San Juan, Puerto Rico 00936-7501 (Telephone 787-754- 8625). Applicants may also register online at the following web site: <http://oprla.collegeboard.com>.²

² Starting on 2012, applications will only be made online.

- c. Instead of the CEEB, students may choose to take the Scholastic Aptitude Test (SAT I) along with three Achievement Tests in English Composition, Level I Mathematics and Spanish Reading Comprehension. The ELPT examination is not equivalent to the SAT II in English, so it is not an acceptable substitute.
 - d. Students interested in taking the Scholastic Aptitude Test (SAT) and the Subject Test II (SAT) may contact Educational Testing Service, Box 1271, San Juan, Puerto Rico 00936 (Telephone 787-753-6363) or they may access <http://collegeboard.com>.
3. Submit an admissions application on or before the date established by the University of Puerto Rico. The Admission Form will be available at the Admissions Office of the University of Puerto Rico, and on line at www.estudiantes.upr.edu. An application fee of \$30.00 will be charged during the registration process.

The Selection Process

A formula for computing a General Admissions Index (GAI) has been established to determine who may be admitted to any of the units of the University of Puerto Rico. This formula is applied equally to all applicants. The formula assigns a value of 50% to the applicant's high school average and 50% to the score obtained in the both the Mathematical Reasoning exam and in the Verbal Aptitude exam of the College Entrance Examination administered by the CEEB or SAT I.

Each year a minimum admissions index is established. Each UPR unit select their students according to their admissions index, in descending order, until all available places are filled or the minimum index is reached, whichever happens first.

Applicants from High Schools in Foreign Countries

Students graduating from high schools in foreign countries must also comply with the following requirements:

1. Submit an official academic transcript of their secondary education in the vernacular of their country of origin. A Spanish or English translation of the transcript must be submitted, certified by the Ministry of Education of the country of origin and by the American consulate.
2. Submit official explanatory evidence of the grading system, the contents and level of courses taken and the number of meeting hours assigned to each course.
3. Submit evidence of all degrees and diplomas obtained.
4. Take steps to obtain a certification of equivalency for the degree from the Puerto Rico Department of Education.
5. Submit evidence of economic resources to study in Puerto Rico.

Admission Requirements for Students Accepted on the Basis of Special Skills (UPR Board of Trustees Certification 25 2003-2004)

The University of Puerto Rico at Arecibo will authorize admission to a limited number of students on the strength of their special abilities, talents or conditions. In order to be admitted on the basis of special skills, talents or exceptional circumstances students must meet the following requirements:

- A minimum high school average of 2.00 or approval of high school equivalency examination administered by the Puerto Rico Department of Education.
- Take the required admissions exams
- Applicants must indicate in the application form that they possess exceptional talents or skills.
- The difference between the applicant's GAI and the minimum required for admission to their program of choice shall be no more than 20 points.

The total number of students admitted under this category will be subject to availability of spaces in each academic program and shall not, in any case, exceed 2.2% of the total number of students admitted to the university.

Every year, the Office of Admissions of the UPR Vice-presidency for Academic Affairs will send each unit a list of those students who qualify for admission under this category. These are the only students that may be considered for admission.

An advisory committee designated by the Chancellor will evaluate the cases referred by the Admissions Office and submit their recommendations to the Chancellor's Office. This committee will set the criteria for admissions on the basis of exceptional talents or skills. The Chancellor will have the final authority to grant admission to these applicants.

The Admissions Office will submit a report to the Office of Vice-President for Academic Affairs including the names of the students admitted on the basis of special skills. The report will also include the special ability, talent or condition, the academic program to which students were admitted, co-curricular activities and any agreement of services according to the category indicated.

The Registrar's office will submit a report to the Office of the Vice-President for Academic Affairs comparing the retention rate and academic progress of students admitted on the basis of special skills, talents or exceptional conditions to students admitted on the basis of their academic potential.

Regulations for Admission for Applicants from Other Universities (Transfers) (UPRA Academic Senate Certification 2007-08-24)

Applicants for transfer are students who have never studied at the University of Puerto Rico System and who are enrolled in another duly accredited university:

Transfer requirements are the following:

1. Filing an application for transfer before the deadline established in UPRA's academic

calendar. There is an application fee of \$50.00. Late application fee is \$60.00.

2. Candidates must obtain an official transcript from each of the institutions where they have studied. These should be received 15 working days before the date established on the calendar.
3. Candidates must complete Certification of Clearance from each of the institutions where they have studied. Candidates must not be subject to any disciplinary or academic sanction in their institution of origin.

Requirements and General Regulations

Transfer candidates must meet the following criteria:

- Must have approved 24 credits at the time of application with a minimum academic index required by the academic department.
- Students with less than 24 credits must comply with the following:
 - Current results of the University's entrance examination.
 - Have the required GPA as established by the academic program in the year for which the candidate is applying.

Criteria for the evaluation of the applicants' academic records

- Pre-basic or preparatory courses will not be considered for validation or to calculate the number of credits completed or the general average.
- Courses passed with a D will be considered to calculate the number of credits approved and the student's general average, but will not be transferable.
- Courses with a grade of F will be considered when determining the general grade point average.
- It is the responsibility of the candidate to know about other requisites established by the academic departments.

Additional Requirements for Transfer Applicants from Foreign Universities

1. Submitting an official academic transcript of their secondary education in the vernacular of their country of origin. A Spanish or English translation of the transcript must be submitted, certified by the Ministry of Education of the country of origin and by the American embassy.
2. Submit evidence of all degrees and diplomas obtained.
3. Submit official explanatory evidence of the grading system, the contents and level of courses taken and the number of meeting hours assigned to each course.
4. Present evidence of proficiency in Spanish and in English.
5. Submit evidence of economic resources to study in Puerto Rico.
6. The University of Puerto Rico will ask, as an additional requirement to foreign students, a course by course evaluation from World Education Services, Inc. (www.wes.org).

Hours:

The Admissions Office is open to the public Monday through Friday from 8:00 a.m. to 12:00 and from 1:00-4:30 p.m.

REGISTRAR'S OFFICE

The Registrar's Office receives, organizes and preserves the documents pertaining to the academic activities of the students. The web address is: <http://registro.upra.edu>.

Regular Hours

Monday, Tuesday, Wednesday, Thursday and Friday	8:00 am - 12:00 m 1:00 pm - 4:30 pm
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ONLINE REGISTRATION

- Students will pre-register on the internet once made their academic counseling (will select courses and sections for the following semester) in their department during the dates set for this purpose in the Academic Calendar.
- Newly admitted students will receive a PIN (password) to gain access for pre-register to internet registration.
- During the second semester every student must also fill the section related to the Buckley Law that is sent to the email during this process. Any changes to the information on this form may be made at the Registrar's Office.
- Students who do not pre-register must request their courses in each of the corresponding academic departments on the day assigned. They must pay their tuition and fees at the Bursar's Office.

ONLINE PAYMENT REGISTRATION

- Students select and pay for courses and services to which they will be entitled during a given semester. Students are only authorized to attend the courses and sections indicated in their class schedule for that semester. It is the student's responsibility to check the course before making the payment.

CHANGES IN COURSE SCHEDULE

Changes are sometimes necessary during the registration procedure because sections are cancelled, or students fail the pre-requisites for their selected courses. In this case, students must remove the PM in the area indicated by the Registrar's Office and must go to the corresponding department to have the course erased from the class schedule and proceed to complete the procedure for payment and will receive a new class schedule at the Bursar's Office.

Once the registration process is finished, students are responsible for verifying their class schedule to ensure that they are registered for the courses chosen, and to verify whether the courses are correctly designated as Grade or No-Grade according to their curriculum. The computerized registration and the printed class schedule constitute official evidence of registration.

ACADEMIC LOAD

The academic load for a program consists of a group of subjects with an approximate value of 12 credits per semester, as required by the curriculum of academic departments. But these are likely to increase or decrease according to the authorization of the Dean for Academic Affairs. However, the number of credits it can not exceed 21 credits per semester.

Academic load during the summer session. It shall not exceed three (3) courses with a maximum of seven (7) credits. Candidates for graduation in the summer session, and students with honors registration are exempted from this rule. These students may be enrolled in a maximum of 10 credits, with the recommendation of the Director of the academic program, and the written authorization of the Dean for Academic Affairs. Students may not take both parts of a sequential course during the summer session.

CLASSIFICATION OF STUDENTS

UPR students are grouped in the following categories:

1. **Full time students** are those undergraduates taking a regular course schedule equivalent to twelve (12) credits per semester and who are pursuing a degree. Similarly considered regular undergraduate students enrolled in those courses of practice recognized by the Academic Senate as equivalent to full academic load.
2. **Part-time students** are those undergraduates that follow an academic program of fewer than twelve credits per semester, but that nevertheless are candidates toward a degree, diploma or certificate from this institution.
3. **Visiting students** are those authorized by the Dean for Academic Affairs to take a course without receiving credit or official qualification for the work performed. Students can audit a maximum of two courses and must pay a \$67 registration fee for each course.
4. **Transient or special-permit** students are those that are registered in another UPR unit, but with the authorization of the Dean for Academic Affairs take several courses subject to quota, for a semester at UPRA. You can only register in courses identified in the authorization; otherwise it shall amend the same. This special-permit must be renewed each semester.
5. **Professional development students** are those who do not follow a course of studies leading to a degree. They can enroll in courses in order to acquire knowledge or skills. (UPRA Senate Certification Num. 2014-15-23)

COURSE CODES

Each course offered at UPRA is coded in an alphanumeric code that consists of four letters that identify the subject matter and four digits that identify the level of the course.

ALPHABETIC CODE
(XXXX)
Initials of the course

NUMERICAL CODE
Level (XXXX) sequence
Course itself

Numerical part of the code

The first digit of the numeric section identifies the course level, according to the following table:

- | | |
|---|--|
| 0 | Remedial-The material is considered pre-college level even if it is offered at the university. |
| 1 | Associate, first level |
| 2 | Associate, second level |
| 3 | Undergraduate, second level. First two years of the bachelor's and transfer programs |
| 4 | Undergraduate second level. Next two or three years of the bachelor's programs. |
| 5 | Courses that may be credited towards a Bachelor's or a Master's degree with authorization of the Department Chair. |
| 6 | General graduate courses |
| 7 | Doctorate, first level professional |
| 8 | Specialized graduate courses |
| 9 | Post-doctoral (Also used to assign temporary numbers to courses). This is precisely its use in this catalog.) |

The second and third digits of the numerical series identify the sequence of the course; the 00 to 99 digits have been reserved for courses with a varying number of credits.

The fourth digit identifies the course sequence. The sequence indicates that a second semester of the course is offered. The sequence does not establish pre-requisites. Pre-requisites, if there are any, are informed by the UPR unit in its catalog, course schedules, and other official documentation.

CLASS ATTENDANCE

Attendance is mandatory. Professors have the duty of noting absences of their students and reporting these to the Registrar's Office along with the semester's grades, and also on the Class attendance lists. Frequent absences may affect the grade and could result in the total loss of credits. According to notification of the Vice President for Student Affairs of the Central Administration, federal regulations (Standards for Participation in Title IV, HEA, Programs), it requires that educational institutions have procedures to demonstrate the support of his students.

These must be able to determine and document when students stop attending, which in turn has an effect on eligibility for federal aid these. To meet this requirement, the periodic verification mechanism was established assistance through lists of classes, these two (2) are performed by half in which each teacher (a) must indicate those students who do not attend regularly in the Portal NEXT, no later than the dates specified.

In print times the duration of each class period specified. To facilitate the process of change both classroom and students moving from one place to other Campus, teachers should begin their classes at the exact time that has been indicated in its program of classes and finish same ten minutes before the next hour class. That is, it means one hour of class a real run for fifty minutes. Classes will have one and a half lasts eighty minutes from the start time. The same pattern is repeated in longer-lasting lessons. Teachers teaching classes of two or more hours may grant a

break of five to ten minutes, depending on the class period.

CREDIT HOUR DEFINITION AND ASSIGNMENT

The University of Puerto Rico at Arecibo follows Federal regulation regarding the assignment of credit hour.

Federal Credit Hour Definition

A credit hour is 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 (1) hour of classroom or direct faculty instruction and a minimum of two (2) hours of out-of-class student work each week for approximately fifteen (15) weeks for one (1) semester or trimester hour of credit, or ten (10) to twelve (12) weeks for one quarter (1/4) 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 activities as established by an institution, including laboratory work, internships, practicum, studio work, and other academic work leading toward to the award of credit hours. 34CFR 600.2 (11/1/2010)

UPRA Assignment of Credit Hour:

One credit hour unit corresponds to one hour of direct contact with faculty. An hour of direct contact as defined by Institutional Policy (Academic Certification Num. 2006-07-27) equals to 50 minutes of academic activity. An academic semester per term or instructional period consists of 15 week + 1 week for final test or final work. The out-of-class time is equivalent to a minimum of two (2) hours.

Course Modalities and Assignment of Credit Hours

1. **Lecture and Seminars** - A semester credit hour unit consists of the equivalent of fifteen (15) hours of direct faculty instruction and a minimum of thirty (30) hours of out of class student work for a combined total of forty-five (45) hours during the instructional period. Furthermore, zero credit hour seminars shall follow the federal guidelines to comply the minimum of forty-five (45) hour per semester requirement.
2. **Laboratory courses** - A semester credit hour consists of the equivalent of at least forty-five (45) hours of combined direct instruction, laboratory work, and out of class study during the instructional period. Furthermore, zero credit hour laboratories shall follow the federal guidelines to comply the minimum of forty-five (45) hour per semester requirement.
3. **Internship courses** - A semester credit hour consists of at least forty-five (45) hours of supervised internship during the instructional period.
4. **Field experiences/study abroad courses** - A semester credit hour consists of the equivalent of forty-five (45) hours of combined direct instruction and student learning activities which may include among other activities shadowing, touring, visitations, written papers, formal presentations, and individual or group work, during the instructional period. If a program has

specialized accreditation the field experience should follow the guidelines of the accrediting organization unless that amount is less than the stated hours above.

5. **Teaching Practicum** - A semester credit hour consists of at least one (1) full-time, five (5) day week of teaching experience. Current standards for teacher licensure require a minimum of six (6) credit hours during a semester-long experience. 320 hours per semester and 16 hours of seminar.
6. **Practicum or Clinical Experiences**- The credit hour assignment varies among academic programs mainly by the nature of the program, their curricular sequence or by specific requirement of specialized accrediting agencies or by professional licensure requirements stated by law. These practicum or clinical experiences should comply with the minimum of forty-five (45) credit hours required by the federal guidelines.
7. **Hybrid Courses**- A semester credit hour consists of the equivalent of at least forty-five (45) hours combined with direct faculty interaction or asynchronous online learning activities and additional student to student, student to instructor, and individual learning activities during the instructional period.
 - **Direct faculty contact:** 50% or more of face-to-face class time and 15% asynchronous online learning. For example, a three (3) credit course is considered a hybrid course if 22.5 hours of 45 contact hours are offered online.
8. **Online Courses**- A semester credit hour consists of the equivalent of at least forty five (45) hours combined with direct faculty interaction or asynchronous online learning activities and additional student to student, student to instructor, and individual learning activities during the instructional period.
 - **Direct faculty contact (Option A):** 94% of contact time is accomplished with online faculty directed learning activities via instruction-led asynchronous (asynchronous audio, video, interaction with asynchronous learning community) and 4% face-to-face interaction period during which time the student will take special tests, quizzes, or special laboratories that required direct interaction between professor and student.
 - **Direct faculty contact (Option B):** 75% of contact time is accomplished with online faculty directed learning activities via instruction-led asynchronous (asynchronous audio, video, interaction with asynchronous learning community) and 25% face-to-face interaction period during which time the student will take special tests, quizzes, or special laboratories that required direct interaction between professor and student. The course should have a minimum of two (2) face-to face meetings during the semester.
9. **Combinations modalities** - Any courses that include multiple modalities of instruction that are not explicitly outlined above, shall follow the federal guidelines and include at a minimum forty-five (45) hours of instruction and student work per credit hour.

ACADEMIC INSTRUCTIONAL UNIT

One (1) college credit is equivalent to one (1) hour of class work (lecture or discussion); from two (2) to four (4) hours of laboratory work, and two (2) hours of language practice, seminars or work of a similar nature, each week. Class periods are fifty minutes, and semesters have a minimum length of fifteen (15) weeks, excluding the period for final examinations.

WITHDRAWALS

Partial Withdrawals

Students may withdraw from one or several courses and still continue as bona fide registered students by following this procedure:

1. Request the withdrawal slips at the Registrar's Office.
2. Complete the information requested.
3. Have the form signed by the appropriate officers.
4. Submit the completed form to the Registrar's Office on or before the date assigned on the Academic Calendar. Students must show the ID card at the time.
5. A **W** will appear on their record instead of a grade.

Full Withdrawal

Students may withdraw completely from the University at any time during the semester up to the last day of classes. A 'W' will appear instead of a grade for each course in which they are enrolled, and students will be formally separated from the University of Puerto Rico.

The procedure for a total withdrawal is the following:

1. Request the withdrawal forms via NEXT Portal.
2. Complete the information required in the document.
3. Get the signatures required.
4. Process the withdrawal at the Registrar's Office at or before the date indicated in the Academic Calendar. Students must show the ID card at the time.

REVIEW PERIOD

A period of one or two working days will be scheduled for review at the end of the academic semester and before the final examination period begins. During this review period student shall be free of any academic duty so that they can study for their final examinations. Professors may not give partial examinations and they must be available to their students. This norm is also valid for the summer session.

FINAL EXAMINATIONS (UPRA Senate Certification Num. 2003-04-18)

Every course will close with a final evaluation of the student's work by a method to be determined by the department's faculty. The dates for the final examination will be announced by the Registrar's Office. A preliminary schedule will be available to students to detect conflicts in scheduling. The Final Examinations Schedule, once approved, cannot be modified, unless by authorization of the Dean for Academic Affairs.

Generally, a student does not have to take more than two (2) final exams on the same day. Teachers will within five days of the examination period to deliver final grades to the Registrar.

Absence from Final Examinations

A student absent from a final examination duly announced by the Registrar's Office will receive a grade of **0** or **F** in the examination. Students may justify their absence within a period of three working days from the original exam date. If the professor or the department chair determines that the student's absence was justified, the student will receive an Incomplete grade (See the section on removing 'Incompletes').

Absence from Partial Examinations

Individual professor will determine the norms for dealing with absences from examinations in their classes.

GRADING SYSTEM

The grade shows the degree of the student's academic performance in each of course. To make it possible to compute a Grade Point Average, an indicator of the student's general performance, each grade is assigned a numerical value:

A	Outstanding	4.0 per credit
B	Good	3.0 per credit
C	Satisfactory	2.0 per credit
D	Deficient	1.0 per credit
F	Fail	0.0 per credit
P	Pass, not computable for the GPA	
W	Withdrawal	
I + Grade	Provisional Grade or Incomplete	

Since the academic year 2016-2017 the following numerical values were added as part of the student's general performance:

F*	Fail by course withdrawal
W*	Never attended
NP*	Not approved by course withdrawal on pass/fail courses
WP*	Never attended on pass/fail courses

Provisional Grades or Incompletes (UPRA Senate Certification Num. 2001-02-36)

Students who do not complete one or more of the evaluation requirements for a course as established in the syllabus may receive an Incomplete (I) or provisional grade. The provisional grade will be determined on the basis of the work completed, plus a grade of (0) zero for the work not completed. Instructors may grant Incomplete grades according to the students' merits.

Criteria for Removing an Incomplete

1. The following warning must appear in the students' grade reports: Incompletes must be removed within the 60 days following the first day of classes of the next semester as established in the Academic Calendar.
2. If the professor does not notify a change in the provisional grade before or on the deadline set in the Academic Calendar, the provisional grade will become the final grade. The *Incomplete* grade will count for the computation of the students' *General Index*. The professor has 30 days to change a grade, as scheduled in the Academic Calendar.

ACADEMIC INDEXES

The academic index is the numerical representation of the students' academic performance in all courses taken, including failed courses. It is calculated by dividing the total number of honor points by the total number of credits accumulated in the subjects in which the student has received final

grade. (When a course is repeated, only the highest grade obtained will be taken into account.) Those courses from which students have officially withdrawn (W) will not count towards their academic indexes.

1. **General index** is computed taking into account the grades received in all courses taken.
2. **Program index** is computed taking into account all the grades obtained in the required courses of the curriculum of the program from which students request graduation.
3. **Specialization index** is computed taking into account only the grades obtained in the specialized courses for the degree requested.
4. **Retention index** is the minimum academic index the student may have at the end of the academic year. It is computed taking into account the number of credits the student has carried, as established in the retention table. (Accumulated credits approved include those courses with an F.)
5. **Graduation index.** To graduate, students must have at least a 2.00 specialization index and a 2.00 program index.

REPEATING COURSES

Courses Passed with a C

In compliance with UPR Board of Trustees Certification Num. 017-1998-99, the following procedure is established for repeating courses passed with a grade of C.

1. The department director may authorize the repetition of courses with a grade of "C" at the request of the student, as an exception, after analysis of student academic circumstances. The reasons for repetition with "C" is established in the Certification set out above.
2. During academic counseling, advisors will recommend the repetition of courses passes with C based on their knowledge of their advisees' academic aspirations.* Students will fill out the form requesting repetition of a course passed with a grade of C, prior to making the registration process online. This sheet will be available at the Registrar's Office
3. The Registrar and the Dean for Academic Affairs will be notified of esta authorization, as provided for Certification. This authorization is not prospective.

Courses with Grades of D or F or Not approved

1. Students may repeat a course they have failed without any previous authorization.
2. When students repeat a course in which they originally obtained a grade of D or F, the highest score obtained will be used to determine grade point average. However, the original grade will remain in their transcript.
3. For purposes of academic progress can only repeat courses with a "D" once and as often as F, to be approved it.

Grade Reports

At the end of each semester, students can see their final grades via NEXT Portal. You can access to see the same from the first day of finals. Students who believe they have made a mistake in its rating, must notify the teacher. The debtor can not access student see their grades until you pay off

* If the request is not submitted before the registration process, students will be awarded two grades for the same course in their transcript. Both grades will be counted towards their general and concentration indexes. The request may not be processed retroactively after students have repeated the course.

your debt.

PROCEDURE FOR CHANGING FINAL GRADES (UPRA Senate Certification Num. 2019-2020-29)

A student who is unsatisfied with his final grade should talk to your teacher. If the teacher accept that made a mistake, he should submit a letter to the Committee on Academic Achievement by the mentioned certification.

PROBATIONARY STATUS (UPRA Senate Certification Num. 2010-2011-31)

If the cumulative index is less than the retention index established, but does not exceed a tenth (0.10) points as established in the Retention Index Table, the student will be placed in probationary status and will be duly notified of the fact by the Registrar's Office. The Registrar's Office will refer those students to the Counseling and Psychological Services Department, for counseling related to the implications of the probationary status. The student repeated many courses with "D" or "F" that are necessary. Your course load will have a maximum of 15 credits. It must reach the minimum average established at the end of the academic year. It will not be partial or total withdrawal without prior approval of the Director (a) Professional. In special circumstances where the Dean of Academic Affairs authorizes the student to withdraw from all courses, the readmission request and the same will be on probation. The probationary period is for one academic year.

RETENTION INDEX TABLE				
Credits Accumulated	Minimum Academic Retention Index	Margin for Probationary Status with Restrictions		Suspension Margin for with Possible Reconsideration
1-32	1.75	.20	1.74-1.55	1.54-1.45
33-64	1.95	.15	1.94-1.80	1.79-1.70
65 or more	2.00	.10	1.99-1.90	1.89-1.80

SUSPENSIONS

A. First Suspension

The student will be suspended for academic deficiencies at the end of the academic year and remain detached from the University of Puerto Rico for one academic year before being eligible for readmission under probation status. During an academic suspension student will not receive credit towards courses taken in other university institutions. It includes courses taken in other campuses of the University of Puerto Rico.

B. Second Suspension

Students, who fail to achieve the minimum index for retention for a second time, will be suspended for academic deficiencies and must remain two (2) years out of the University of Puerto Rico.

C. Third Suspension

The students who fail to achieve the minimum retention index for the third time will be suspended for academic deficiencies and precluded from studying at the University of Puerto Rico for four (4) years. After a third suspension, students who again fail to reach the retention index required according to the Retention Index Table will be permanently precluded from studying at the University of Puerto Rico

FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT OF 1974 (FERPA)

Better known as the Buckley Amendment, FERPA provides ensures the confidentiality of student academic information. Students shall have the right to keep the university from divulging their confidential academic records by submitting a written request to that effect. Students may authorize access to other individuals only through a signed written consent form. Failure to authorize disclosure will limit the following:

1. information requests from personnel recruiters from public or private agencies;
2. scholarship offers and other forms of financial aid;
3. enrollment in another university, etc.; and
4. other agencies that have granted financial aid or the "Department of Veterans Affairs" will evaluate and determine eligibility and the time during which student will receive financial.

In the following cases, information may be disclosed without the student's consent:

1. requests from authorized representatives of the Comptroller of Puerto Rico or the Secretary of Justice.
2. requests for information or copies of student transcripts from parents who show students to be their dependents as defined by the Income Tax Law.

Written consent by students is necessary to disclose information when requested by the following:

- banking institutions
- Veteran's Administration
- ROTC
- other agencies that have provided financial aid or student loans
- emergency health situations
- educational institutions whose directories include students who have been inactive during the last semester

Written authorizations signed by students are valid, except when students submit a written request to nullify them.

VETERANS

Benefits

UPR students who are veterans (as defined by the Veteran's Administration) of the United States Armed Forces and who receive benefits under the following chapters:

- CAP. 1606 - 1607 GI BILL RESERVISTAS
- CAP. 30 - GI BILL SERVICIO ACTIVO

- CAP. 35 - SOBREVIVIENTES Y DEPENDIENTES
- CAP. 31- REHABILITACION VOCACIONAL
- CAP. 33- POST 911 GI BILL

Law No. 203 of 2007 Puerto Rican Veteran Rights of the century "The December 14, 2007 was approved, with immediate effect, known as Law 203 Charter of Rights of the Puerto Rican Veterans. The law compiles all previously approved legislation and orderly outlines the benefits that the Government of Puerto Rico gives to veterans who have served in the Armed Forces of the United States defending the principles of democracy ". Among these benefits they are related to education.

To receive benefits, December 14, 2007, the Senate of Puerto Rico approved with immediate effect, the 203 law known as Bill of Rights XXI Century Puerto Rican Veteran. To receive the benefits specified in this Act you have to be a Veteran, son of Veteran Veteran spouse.

“STUDENT RIGHT TO KNOW ACT”

In December 1995, the United States Department of Education, issued the necessary regulations to implement the law known as "Student Right to Know Act" (SRTA). This law requires post-secondary institutions participating in the economic assistance programs of Title IV, compile, publish and disseminate information concerning graduation rates and transfer students. The Office of Academic Affairs of the Central Administration, in conjunction with the institutional units promulgate appropriate procedures for disseminating information through various media, such as brochures, catalogs and literature on admissions.

NORMS AND PROCEDURES FOR READMISSION, RECLASSIFICATION, SPECIAL PERMITS, TRANSFERS AND ARTICULATED TRANSFERS IN THE UNIVERSITY OF PUERTO RICO AT ARECIBO (UPRA Academic Senate Certification Number 2007-08-24)

The procedure for the consideration of the applications for Readmission, Reclassification, Special Permits, Transfers, and Articulated Transfers as offered by the University of Puerto Rico at Arecibo is in charge of every academic department's Committee for Readmission, Reclassification, Special Permits, Transfers, and Articulated Transfers. This committee will consult and advice the chair of the department of the process.

I. Readmission

A. Definition:

The process by which an undergraduate student of the University of Puerto Rico at Arecibo, having interrupted his/her studies for one or more semesters or obtained an academic degree asks for readmission to the University.

Includes:

- A student who obtained a bachelor's degree from the University of Puerto Rico system and presents an interest in studying another major.
- A student who obtained an associate degree from the University of Puerto Rico at Arecibo.

Excludes:

- Undergraduate students from other units of the system.
- Students with a special permit.
- Students who obtained an associate degree from another unit, and must request a transfer or readmission, according to the case, from their unit of origin.

The application for readmission in time is \$ 40.00 and \$ 50.00 late application (non-refundable), which will be paid in the Bursar's Office.

Students suspended for academic deficiencies that interest readmission should meet with your counselor. Should check the expiration date of his suspension and having to repeat courses before filing their application.

Readmission applications are subject to assessment I Academic Department Director concerned and the approval of the Dean of Academic Affairs. These take into consideration the applicant's academic record and place limits stipulated for each department, having provided for the active students of the Campus.

This application is for students whose identification numbers are from the UPR system, bachelor's degree graduates or undergraduates who took their last courses at the University of Puerto Rico-Arecibo. Students with a Special Study Permit must submit their application in the institution where they were admitted as regular students. The applicants who have never studied in the UPR system must apply for admissions through the Admissions Office.

II. Reclassification

The active student interested in pursuing studies in another department or program may file a request to that effect in the Registrar's Office. The term to file it is arranged in the academic calendar and the filing of the application involves the payment of \$ 25.00 to \$ 35.00 late time (non-refundable) to be paid in the Bursar's Office.

To be eligible for reclassification, the student must have the time of their admission to the University, the rate of income required for the program to which it seeks reclassification.

All applicants for admission reclassification index was lower than that required in the program that reclassified interest, must comply with the minimum rate required by the faculty of interest.

III. Transfers³

When evaluate the request for transfer, students from the system units are considered on equal terms with the active students of different campuses and units.

Students who are in a transfer program and have completed an Associate of Arts or Science degree and whose studies are oriented toward a bachelor's degree will be granted admission to the level of third year at one of the campuses or units of the University System.

All students must have completed transfer request forty-eight (48) credits at the end of the semester to applying, including course requirements set by the enclosure or drive of your choice are included. If you select a program of study for which your unit or enclosure does not provide complete second-year program, only it is required to have passed thirty (30) credits among which must be included courses that are requirements of the faculty or unit your choice. The student must meet the retention rate required by the institutional unit to

³ Those students who apply for a transfer to the Mayagüez Campus of the University of Puerto Rico, if taken ENGLISH 3101-3102, since August 2000 will not be accepted as a substitute for 3221-3222 ENGLISH sophomore English. They were only accepted as a substitute for sophomore English to those who have taken ENGLISH 3103-3104.

The sequences are accepted from August 2002 are as follows: ENGLISH ENGLISH 3101-3102 and 3201-3202 or 3103-3104 and second year course except INGL 3201-3202. A student who does not meet the requirements of these sequences, will have to take the courses given to meet the requirements of the Department of English at Mayagüez.

which request. (JS Cert.115 1996-1997).

The transfer student must meet the requirements for admission to a graduate program, which were in effect on campus or unit that is to receive, when the student enrolled in his first year as a unit of origin. If there has been disruption and delay in their studies, the School who has received determine graduation requirements to be applied. Transfer students will be on equal footing with students about adjusting unit needs to be done in their programs.

Students must submit your request Shuttle dates announced in the academic calendar. You should meet with their academic advisor to determine if you qualify. You should carry their transcripts, notes and class schedule. If the academic advisor tells you that you are eligible, you will pay on time transfer request \$ 45.00 and \$ 55.00 late application. Readmission and Transfer Request pay \$ 45.00 and \$ 55.00 late application (non-refundable) in the Bursar's Office.

IV. Special Permits

A. Definition

The authority that grants an active student in any unit of the University of Puerto Rico permission to study in other units or accredited college institutions with the purpose of transferring the student back to their unit of origin. It is valid for one academic session and must be submitted on the due dates stipulated in the academic calendar.

B. Justification for Special Permits

The objectives for the procedure of special permits are the following:

1. Expand the student's educational alternatives by allowing the student to take courses in other units or educational institutions due to his/her own initiative or as an exchange student.
2. Offer the student the opportunity to become exposed to different educational cultures.
3. Take care of personal matters that require the student to relocate to a different unit or accredited institution on a temporary basis.
4. Ease the student's academic progress, allowing the student to take courses which are not offered in their unit of origin.

C. Eligibility

1. Every student from the University of Puerto Rico system will be able to request a special permit in any of the system's units up to a maximum of 50% of their program's credits.
2. A special permit is granted only to students with a 2.0 or higher GPA to study in another unit or accredited institution during the authorized academic session.
3. The student requesting the special permit must have studied for at least one semester prior to receiving the authorization.

Requisites

1. The student requesting a special permit may take up to 50% of the credits towards the academic degree.

2. With a special permit the student may only take the courses required for his/her academic program.
3. The student may only enroll in previously authorized courses. The unit of origin may indicate in the document alternative courses which the student may take only if the number of maximum authorized credits is not exceeded. If the student wishes to take additional courses an amendment must be made in their unit of origin by filling out a new request application.
4. Concurrent studies at more than one academic institution are authorized only if the number of credits combined within and outside of their unit of origin, 21 credits during the spring or fall semester and seven (7) credits during the summer session, is within the regulations of the unit of origin. The Dean for Academic Affairs may authorize up to 22 additional credits each semester in exceptional cases and 10 credits in the summer in those cases deemed meritorious.
5. You pay the fee on time for \$ 35.00 plus \$ 5.00 for the cost of the transcript. The total cost of the late application amounts to \$ 50.00. The request to the Río Piedras requires two transcripts, so the total cost is \$ 45.00 application on time and \$ 55.00 the late application. (Non refundable).

All courses taken in another unit of the University of Puerto Rico passed to the transcript, including grades. Courses taken in private institutions is always credited to obtain the minimum required score of C and be recorded as approved (P).

Final approval of a special authorization is subject to the availability of courses and places in the host institution.

It is the responsibility of the Special Permit Students applying to private institutions, apply their academic record in that institution, once culminates (the) courses. This has to be sent to the University of Puerto Rico at Arecibo.

V. Transfer of Credits (UPRA Academic Senate's Certification Number 2002-03-25)

Any student who has taken courses at an accredited private university must request recognition of credits to officially determine the courses that the University of Puerto Rico at Arecibo will accept.

The criteria are:

1. That there is correspondence between the objectives and content of 80 percent or more on offer in the university system.
2. The number of credits assigned to the course or courses to be validated must be equal or greater than the number of credits the course for which you want to do the validation.
3. Only courses with a "C" or more are validated.
4. Only will be validated up to 15% of specialty courses to which the request (the) student.

Procedure:

1. To request an official transcript of their academic record of Private Institution of origin, send it to the Registrar's Office.
2. To request a form of recognition of credits in their academic department.
3. The director of department circulated the document to the other directors or program coordinators.
4. The department director endorses documents to the Dean of Academic Affairs.
5. The Dean of Academic Affairs will evaluate the dossier and submit it to the Registrar's Office.
6. The Registrar's Office will retain the original, marked with information on the transcript and send a copy to the student.

COURSE EQUIVALENCY

The equivalency of courses defines the process by which courses taken in the University of Puerto Rico system are accredited and recorded on the academic transcript of a student for the program to which it was transferred or reclassified.

The courses offered in any unit of the UPR system that have the same course code will be considered equivalent. It is recommended that in those case where the general education courses have different course codes, the institution considers an equivalency taking as reference primarily if both courses and group of courses respond to the same objectives of the program of the Institution where the student was admitted. The convalidation or equivalency of concentration courses will depend primarily on their similarity with the objectives and content of the course.

GRADUATION (UPRA ACADEMIC SENATE CERTIFICATION NUM. 2005-06-31)

To qualify for graduation students must fulfill the following requirements:

1. No less than a 2.00 program index and a 2.00 specialization index
2. Take and pass their last twenty-eight (28) credits at the University of Puerto Rico. (In exceptional cases this requisite may be waived upon recommendation of a committee made up of the Dean for Academic Affairs, the Dean for Student Affairs and the Chancellor of the University.
3. Must pay all outstanding debts with the University.
4. Must not be under any disciplinary action.
5. Must have finished all course work for their degree within the time-frame stipulated by the regulations. For a two-year program the maximum time allowed is three (3) years; for a four-year program the maximum time-frame is six (6). Students who exceed these limits may be required to repeat those courses that require review according to the Dean for Academic Affairs.
6. Students must file an official application for graduation during the specified dates of the semester in which they finish their course work for graduation. The application carries a fee of \$80.00 payable at the Bursar's Office. This application is valid for a period of one year. Students who do not qualify for the degree they are requesting must reactivate the application for graduation during the period when they complete the requirements.
7. Be recommended by the appropriate Faculty or Program for the degree.
8. Students must attend commencement ceremonies, unless excused by the Dean for

Academic Affairs and the Dean for Student Affairs.

9. In keeping with Certification 85 2005-2006 of the Board of Trustees, students who complete the requirements for the degree in the program they are registered will be considered graduates of the program even if they do not apply for graduation. These students will not be eligible for financial aid, and they wish to continue at the Institution, they must apply for re-admission. However, these students will not receive a diploma or a certification of graduation until they request graduation and pay the corresponding \$27.00 fee.
10. The University of Puerto Rico holds its commencement ceremony only once a year, at the end of the second semester. All degrees are conferred on this occasion. Students, who meet all the requirements for a degree at the end of the summer session, or the first semester, will receive a certificate to that effect.

Changes in Requirements for Graduation

Although the University of Puerto Rico reserves the right to make changes in the requirements for a degree in a program, students will graduate according to the requirements in force at the moment when they were first admitted to the Institution. However, students who do not fulfill the requirements for a degree in the allotted time for their program and students who resume their studies after a period of absence will have to fulfill the requirements for the class with whom they are graduating.

HONORS (UPRA Senate Certification 2005-06-31)

To be eligible for graduation with honors or high honors students must approve at least 50% of their required credits in the University of Puerto Rico. The students complying with this norm and who have a program index of between 3.50 and 3.69 will graduate *Cum Laude* (with honors); those with an index of 3.70 to 3.95 will graduate *Magna Cum Laude* (with high honors), and those with a 3.96 to 4.00 index will receive the distinction of *Summa Cum Laude* (highest honors).

This scale applies to the Graduation index, i.e. the number of credits required in their curriculum for completion of the degree.

CLASSIFICATION OF PROGRAMS

All academic programs offered at the University of Puerto Rico are assigned a number and a code. Students must know the number and code of the academic program where they are enrolled. This number and code are required in all and any documentation that students have to submit to the Registrar's Office. The following academic programs are active during the 2013-2014 academic year.

PROGRAMS

BACHELOR'S DEGREES		
PROGRAM NAME	NUMBER	CODE
Business Administration, major in Accounting	0302	AE-CONT-BAE
Business Administration, major in Finance	0304	AE-FINA-BAE
Business Administration, major in Management	0305	AE-GERE-BAE
Business Administration, major in Marketing	0311	AE-MERC-BAE
Science with major in Microbiology	4506	BI MICR BCN
Computer Science	1224	CC-COMS-BCN
Elementary Education	0419	ED- ELEM-BEE
Education, major in Physical Education for the Elementary School Level	0448	ED-ELFI-BEE
Nursing Sciences	0703	EN-ENFE-BEN
Technology Management and Administrative Processes	0318	AE-GTEC-BOF
Radio and Television Communications	4201	TR-TELE-BTR
Social Sciences, major in Industrial Organizational Psychology	1624	CS-PSII-BAC
Social Sciences, major in Ibero -American Studies	1623	CS-ESIB-BAC
Technology in Industrial Chemical Processes	4501	FQ-TPRO-BPQ

ASSOCIATE DEGREES

PROGRAM NAME	NUMBER	CODE
Nursing	2404	EN-ENFE-AEN
Chemical Engineering Technology	2015	FQ-TINQ-AIQ
Veterinary Technology	2706	BI-TVET-ATV

ARTICULATED TRANSFER PROGRAMS

ARTICULATED TRANSFER PROGRAM ⁴	PROGRAM CODE	RECEIVING UNIT
Science in Civil Engineering	0501	Mayagüez
Science in Electrical Engineering	0502	Mayagüez
Science in Industrial Engineering	0503	Mayagüez
Science in Mechanical Engineering	0504	Mayagüez
Science in Chemical Engineering	0505	Mayagüez
Science in Surveying and Topography	0506	Mayagüez
Science in Computer Engineering	0507	Mayagüez
Science in Mathematics	1205	Mayagüez
Science in Mathematics in Computer Science	1220	Mayagüez
Science in Education Mathematics	1222	Mayagüez

SECOND POLICY BACCALAUREATES, SECOND CONCENTRATIONS LOWER CONCENTRATIONS AND PROFESSIONAL CERTIFICATION IN THE UNIVERSITY OF PUERTO RICO

Governing Board Certification Num. 69-2013-2014 the has regularly lower concentrations, Second concentrations, Certification and Professional as options Seconds Bachilleratos implemented concurrently with the first high school studies. This will not significantly alter neither the time prescribed for the completion of the first high school semester or normal load. This policy is established in harmony and in accordance with university regulations, recognized trends in higher education, standards and criteria and requirements of the law for the accreditation, licensing and professional practice.

The application of this policy is only for undergraduate studies. **Areas of emphasis** not on grade level, do not qualify as second concentrations, and are sheltered by this policy, since they are an integral part of concentrations or specialties and do not constitute additional studies to lead to the Bachelor, although they may be established by special notation on the student's transcript.

Curricular sequences authorized by virtue of Certification No. 27 (2003-2004) and Certification 47 (2004-2005) of the Board of Trustees shall be organized according to the Certification 69. This process should be completed within the period of one year so that for the academic year 2015-2016, all sequences are presented by these new schemes.

⁴ For students right out of high school.

PROVISIONS AND REQUIREMENTS ARE AS FOLLOWS:

Professional Certification. Set of formal educational courses and activities associated with an area of competition in the institutional unit recognized by licensing professional accreditation, and compliance with the requirements of applicable law for professional practice. It is organized in a way that is credited to whoever completes successfully, along with the requirements leading to an academic degree of baccalaureate level. Compliance with these professional requirements specified by an entry to that effect in the transcript.

- Professional certifications require a minimum of fifteen credits in courses identified as belonging to concentration. At least nine of these credits are in advanced courses (level 4000 or higher). Free elective constituting the concentration can be counted as part of the requirement for high school graduation program in which the student is classified. (Double counting).
- You will comply with the requirements of applicable law for the practice to be different from the criteria set out in this new certification.
- Professional Certification options will be exclusively in the areas of competition in the institutional unit recognized by licensing professional accreditation, and compliance with the requirements of applicable law for professional practice.
- The student must declare their intention to obtain a professional certification as soon as possible in their curriculum so that complete option at par with the requirements of the Bachelor in which it is officially classified, and within 150 percent of the time prescribed to complete the Bachelor of which is officially classified.

Concentration (Major). A set of formal courses and educational activities focused on a field, functional area or application of greater discipline of a curriculum leading to an academic degree of baccalaureate level. It is organized so that accredits that this field, functional area or application specified after the greatest degree discipline is given, as designated in the Registry of Academic Offer and the license renewal. Associated grades according to their short and intense design not constitute concentration.

Concentration lower (Minor). Set of formal educational courses and activities other than those of courses required for a rally, organized in a way that is credited to whoever completes successfully, along with the requirements leading to an academic degree level of high school. Warrants specified by a notation on the student's transcript.

1. Lower concentrations require a minimum of nine credits in courses identified as belonging to that concentration. None of these courses will be subject to double counting to complete the requirements of a larger or lesser concentration. However, you are free electives concentration can be counted as part of the graduation requirement (double counting) baccalaureate program in which the student is classified.
2. The student must declare their intention to obtain a Declaration of Minor as early as possible in their curriculum so that complete option at par with the requirements of the Bachelor in which it is officially classified, and within 150 percent of prescribed time to complete the Bachelor of which is officially classified.

BURSAR'S OFFICE

The Bursar's Office is part of the Finance Office, which is a division of the Office of the Dean for Administrative Affairs. This office is responsible for collecting, accounting and depositing the money received by the Institution for tuition and other related fees. Payments must be made in U.S. dollars, postal money order or certified checks made to the University of Puerto Rico, VISA, MasterCard, American Express or debit cards.

The following fees, prescribed by the university are tentative for new students and transfers for 2019-2020 and are subject to change at the discretion of the Governing Board. Based on this Governing Board, tuition and fees have been established by Certification Num. 19-13 of Central Administration Finance Office.

TUITION

Undergraduate credits: Including Two and Four-Year Programs, and Two-Year Technical and Service Programs

**Beginning on academic year Period for which tuition cost
will be guaranteed Cost of credit**

August 2011	2011-2016	\$53.00
August 2012	2012-2017	\$55.00
August 2017	2017-2018	\$56.00
August 2018	2018-2019	\$115.00
August 2019	2019-2020	\$124.00
August 2020	2020-2021	\$124.00

Non-Resident Students

- For U.S.A. citizen's non residents of Puerto Rico: \$186.00 per credit for regular students enrolled in four or five-year undergraduate programs plus applicable regular or special fees. For foreign students: \$248.00 per credit for regular students enrolled in four or five-year undergraduate programs plus applicable regular or special fees.
- The Certification 77-2019-2020 of Board of Governor establishes of the academic year 2020-2021, the cost of tuition for Non-Resident Students and International Students of the University of Puerto Rico, will be equal to the cost of tuition for Local Students or Residents, Other fees (non-refundable).

Maintenance fee \$75.00 per academic session (per semester and per summer session)

Technology fee \$25.00

Health Insurance The fee varies according to the contract between the UPR and the health insurance provider. The health insurance policy for the second semester covers students until the end of the summer session.

Other Special Fees

All applications paid after the date set on the Academic Calendar have an additional cost. Some applications also require payment for additional transcripts along with the cost of the application.

FEES	ON TIME	PAST DUE DATE
Application for Admission	\$30.00	\$40.00
Application for Readmission	\$40.00	50.00
Application for Readmission Transfer	45.00	55.00
Application for Transfer	33.00	49.50
Application for transfer within the UPR system	45.00	55.00
Application for a Reclassification	25.00	35.00
Application for a Special Permit	35.00	45.00
Application for Special Permit to UPR Río Piedras	40.00	50.00
Diploma fee	80.00	
Duplication of documents	5.00	
Laboratory fee (per laboratory)	100.00	
Identification card	10.00	
Transcripts	5.00	
Late registration (surcharge)	20.00	
Deferred payments (number of credits x \$3.00 ÷ number of installments) maximum number of installments is 5		
Fee for auditing courses	67.00	

Dubitation Waiver

UPR Board of Government Certification 2019-2020-04 establishes that regular students, from second up to fifth year, who place among the top 4% of students in their program and maintain an academic index of 3.50 or more can receive a financial assistance for merit.

Special cases: UPR Board of Government Certification 2019-2020-04

UPR Board of Government Certification 2019-2020-04 provides a merit scholarship and aid to the tuition charges that the Pell grant does not cover, other requirements are established in the certification

1. First-year student-athletes belonging to a national team (adult or sub-22), players belonging to Superior League teams as certified by respective federation presidents or franchise-holders; and athletes whose records are comparable to the eight finalists in the previous "Justas Interuniversitarias" (Intercollegiate Track and Field Meet) may be considered for financial assistance and tuition that the Pell aid
2. Students who have shown exceptional artistic abilities as certified by recognized and prestigious organizations may be granted financial assistance beginning with their first year of study.
3. financial assistance is applied to the student representative before the University Board.

All university personnel, their spouses and children who comply with established norms can received financial assistance to the tuition charges that the Pell grant does not cover. When registering, they must present the official document authorizing them to register issued by the appropriate UPR agency or Unit.

MAXIMUM NUMBER OF CREDITS TRANSFERRABLE BY PROGRAM

To ensure that our graduates achieved the desired profile, objectives, and the conceptual framework defined in our academic programs, it is required that our students be exposed to the maximum number of courses possible at UPRA. To that effect, the Academic Senate issued Certification 2002-03-25 describing the regulations for transferring credits. The regulations include a limit of 15% of concentration courses. In accordance with this certification, the following table specifies the maximum number of concentration that may be validated by academic programs for transfer to UPRA from other institutions.

ASSOCIATE DEGREE PROGRAM	CONCENTRATION CREDITS	MAXIMUM NUMBER OF TRANSFERRABLE CREDITS
Chemical Engineering Technology	31	4
Nursing	29	4
Veterinary Technology	35	5

BACHELOR'S DEGREE PROGRAM	CONCENTRATION CREDITS	MAXIMUM NUMBER OF TRANSFERRABLE CREDITS
Arts in Elementary Education with major in Physical Education for the Elementary Level	70	11
Arts with major in Elementary Education	63	9
Science with major in Microbiology	39	6
Business Administration with major in:		
Accounting	80	12
Finance	79	12
Management	71	11
Marketing	70	11
Technology Mangement and Administrative Processes	57	10
Science in Nursing	60	9
Science with major in Computer Science	45	7
Social Sciences with major in Ibero-American Studies	66	10
Social Sciences with major in Organization Industrial	61	9

BACHELOR'S DEGREE PROGRAM	CONCENTRATION CREDITS	MAXIMUM NUMBER OF TRANSFERRABLE CREDITS
Psychology		
Technology in Television and Radio Communications	48	7
Technology in Industrial Chemical Processes	66	10

ACADEMIC SERVICES

LIBRARY

Certificate of Evaluation from the Association of College and Research Libraries (ACRL)

VISION

It will be recognized as the main information and research center of the north central region for its services and resources.

MISSION

To provide information services and resources to users with updated collections and emerging technologies. In addition, develop the necessary skills in students to locate, evaluate, and use information ethically in support of the teaching - learning process.

HOURS

Monday through Thursday: 7:00 a.m. – 9:50 p.m.

Friday: 7:00 a.m. – 4:20 p.m.

Saturday: 8:00 a.m. – 4:20 p.m.

Telephone: (787) 815-0000 / Extensions: 3150, 3151, 3170

WEB Page: <http://biblioteca.blogs.upra.edu>

SERVICES

The Library provides services for 78 hours a week and these include:

- Information Literacy Program
- Borrowing books
- Database stations, journals, magazines, newspapers, books and microform materials
- Interlibrary loans among the University of Puerto Rico Library branches
- Projection Room
- Reference Collection
- Electronic Reserve
- Virtual Reference
- Conference Room
- Exhibition Hall
- Videoconference and Multipurpose Room
- Assistive Technology Room (Disability Services)
- Study Rooms and Study Carrels
- Print and photocopy services

ORGANIZATION

The Library responds to the Dean for Academic Affairs. It is divided into four main areas: Public Services, Multimedia, Collection Development and Administrative Offices.

Public Services

- Borrowing books - General Collection of books for use in room or taking out.
- Reserve Collection - Collection of books that faculty and librarians have separated for the courses.
- Electronic Reserve – Faculty Instructor may place certain articles, quizzes, homework solutions, assignments, and other materials. This is available on the website of the Library. The student can be accessed using the institutional email. The documents are digitized and are governed by the copyright law.
- Youth Collection - consists of books and audiovisual resources for children and youth. It support the Elementary Education Program.
- Special Collections - consists of the collection of Arecibo Region, University Historical Archive, Francisco Matos Paoli Collection, among others. It organizes and preserves the bibliographic, historical and cultural heritage of the city and other towns in the region.
- Reference Collection and Databases - consists of the main sources of consultation of the Library as encyclopedias, dictionaries, atlases, among others. The databases include: ProQuest, EBSCOHOST, GALE, Science Direct, Wiley Online Library, Films on Demand, Microjuris, ACS, among others. Also Open Access Databases likes Dialnet, Redalyc, Scielo, Clacso are included.
- Magazines and Newspapers Collection - Contains magazines and newspapers printed and microfilmed. It has major magazines published in Puerto Rico and local newspapers.

Multimedia Area

It is located on the second floor of the Library and includes Conference Rooms, Exhibition Hall, Projection Room, Video Conference Room and Information Literacy Program, Video and Music Collection.

- Conference Room - The room is equipped with chairs, projection screen, video/data projection system, wireless network, and phone jacks. The area can accommodate 75 people. The room is available by reservation.
- Exhibition Hall - In this room art exhibitions and other cultural and educational expressions of interest to the university community are presented.
- Projection Room - This room seats 25 people and includes data and video projector, electronic screen, computer, and DVD, Blu-ray and VHS player.
- Videoconference and Multipurpose Room - This room can accommodate 25 people and is located on the second level near to the Library Reference Area. Allows the transmission and reception of conferences, webinars, virtual meetings, among other forms of distance education.
- Information Literacy Program -The program aims to empower users with the information skills necessary for academic research development. Information skills are essential for general education and major academic programs accrediting agencies. The program staff develops educational and advocacy services Library materials.
- Music Collection - Is housed on the 2 floor of the Library. The music collection consist chiefly of classical music, but includes jazz, folk and ethnic discs among.
- Video Library - This collection includes a variety of films, documentaries and other recordings in VHS, DVD and Blu-ray formats. The need for individual or group use equipment provided.

- Assistive Technology Room (AT) - Assistive Technology Room, located on the first floor of Library. Room houses technologies to facilitate academic success and provide alternate format access to library materials for users with a variety of vision, hearing, learning, and/or mobility related disabilities. This technology rooms contain special software programs like the Dragon Naturally Speaking, Computer with "Zoom Text", the "Open Book", Webcam, Magic Professional with speech Spanish, Illuminated hand-held magnifier and other programs.

Collections Development Area

This area is located on the first floor of the Library. It's responsible of the acquisition, cataloging and classification of the library information resource.

Administrative office

The Library Director office is located on the first floor of the building. The director oversees and directs the Library's operations including public service, collections, technology, administration and facilities management.

Library Friends Association

The Library Friends Association has UPRA aims to serve as liaison between the Library and the external community. It also encourages the use of the Library and its information resources promoting social, cultural and intellectual development.

LIBRARY FACULTY

Amador Torres, Nilda. M. L. S., Master in Library Science, University of Puerto Rico, at Río Piedras Campus, Librarian III.

Corchado Reyes, Ángel. M. M. L. S., Master in Library Science, Interamerican University of Puerto Rico, at San Germán Campus, Librarian II.

Fuentes Sánchez, Marinilda. MTS, Master Theological Studies, MLS, Master in Library Science, University of Puerto Rico, at Río Piedras Campus, Ph.D Candidate in Theological Studies, Pontificia Javeriana University, Colombia, Librarian IV.

Maldonado Maldonado, Víctor. M., M. L. S, Master in Library Science, Interamerican University of Puerto Rico, at San Germán Campus, Ed.D. Candidate in Education NOVA Southeastern University, Miami, FL., Librarian III.

Maldonado Rivera, Jadira. M. L. S., Master in Library Science, Interamerican University of Puerto Rico, at San Germán Campus, Librarian III.

Roldán, Plumey Blanca. M. L. S. Master in Library Science, University of Puerto Rico, at Río Piedras Campus, Librarian III.

Rosado Quiñones, Robert. M.L.I.S. Master in Library and Information Science, Interamerican University of Puerto Rico, at San Germán Campus, Librarian I.

Santos Orozco, León, D. M. L. S. Master in Library Science, University of Puerto Rico, at Río Piedras Campus, Ph.D Studies in progress University of Puerto Rico, at Río Piedras Campus, Librarian II.

HONOR STUDIES PROGRAM

The Honor Studies Program is a unique experience for those students who want to make the most of their university education. Its objective is to enrich the educational development of students in an interdisciplinary framework. Students follow their chosen program of studies and take courses Honors courses as electives. Students from all programs are admitted. They take special courses, seminars, tutoring and do research in their areas of specialization.

Benefits

1. Individualized academic counseling
2. Early pre-registration and registration
3. Access to publishing essays, scientific articles and creative literature.
4. Informal lectures, conferences, workshops and field trips, among others, designed to achieve the Program's objectives.
5. Honor courses and seminars
6. Participation in symposia, scientific congresses, conventions, encounters, cultural and study trips in Puerto Rico or out of the country.
7. Letters of recommendation as needed by participants.
8. Study areas reserved for their use.
9. Flexibility in Library services, such as extended book loans
10. I.D. card with the program logo identifying students as active Honor Studies participant
11. Exemption from tuition and fees after freshman year.

Requirements for Admission

Entering the Program is voluntary. In addition to an outstanding academic record, students are expected to have leadership characteristics, academic commitment and self-reliance.

1. Students of Associate or Bachelors degrees are eligible.
2. Freshmen must have an index from 5% to 10% above the GAI of students admitted the preceding academic year.
3. Regular students with an average index of 3.5 or more may seek admission to the program if they comply with the requirements for freshmen, without taking their GAI into consideration.
4. All applicants must complete an application for admittance to the program.
5. Applications must be accompanied by at least three references from their high school of origin.
6. Applicants will attend an interview with the director and the members of the Honors Program Steering Committee.

Retention

1. All students in the Program must maintain a general academic index of at least 3.50.
2. They will receive academic advising from the Program Director or one of the members of the Steering Committee.
3. Attendance to meetings and co-curricular activities is required. Students who do not fulfill this requisite may be separated from the Program.

Minimum academic requirements for receiving an Honors Certificate

1. Students must pass a minimum of eight (8) Program credits with A or B. Equivalent courses, special courses, honors seminars, independent studies and tutoring are included.
2. Students must complete an original research project in their area of specialization. The proposal for this project must be submitted to the Steering Committee for approval.
3. Students must participate in co-curricular activities.
4. Students must comply with the required community service activity.

CENTER FOR ACADEMIC SUPPORT AND DEVELOPMENT (CADA)

The Center for Academic Development and Technology Support aims to help students obtain a diploma with a high degree of excellence. Through its Student Academic Development and Support component, it provides individualized and group assistance either through direct services or through electronic means. CADA offers tutoring, mentoring and support services including the use of Moodle, e-mail, the use of computers and internet. Academic support is provided in coordination with faculty. CADA's facilities are in the Title V Building, next to the main building.

CENTER FOR RESEARCH AND CREATIVE ENDEavors (CRC)

The CRC provides faculty and students the necessary mechanisms for intellectual and creative development to foster the strengthening and transformation of knowledge by means of research and creation. It consists of three principal components that impact the whole university community. The academic component includes the resources for research and creation aimed at students. Its main purpose is to identify the ways to help students benefit from research and creation at the state, national and international levels. This goal may be reached in three main manners: participation in federal programs, in consortia with private industry (e.g. COOP-UPRA), and through scholarship and internship programs.

Activities and programs under the CRC include the following:

1. Integrated Science Multi-use Laboratory (ISMuL). The Integrated Science Multi-use Laboratory is designed to promote the advancement of education in science, mathematics and technology using a variety of approaches and techniques. This program, financed mainly by *Puerto Rico Space Grant Consortium* (PRSGC) funded by the National Aeronautics and Space Administration (NASA), functions in a multidisciplinary, interdisciplinary manner and at different levels. The University of Puerto Rico in Arecibo serves as the base for this endeavor which supports students and educators in their search of innovative strategies for the teaching/learning of sciences and mathematics. Its fundamental purpose is to improve the quality of the teaching/learning process in the sciences and mathematics in order to stimulate students to follow careers in these areas and other related fields. To achieve this aim motivation, professional development and research opportunities are offered to students and teachers.
2. Puerto Rico-Louis Stokes Participation Program (PR-LSAMP) - The PR-LSAMP program is an alliance between the Resource Center for the Sciences and Engineering of the UPR Río Piedras Campus,, the University of Puerto Rico System, the Inter American University System, the Pontifical Catholic University of Puerto Rico, and the Polytechnic University of Puerto Rico with the goal of furthering university teaching in Puerto Rico.
The activities of the PR- LSAMP program include a research component to encourage students to participate in scientific projects and present the results of their work in scientific congresses; mentoring for the development of student communication and leadership skills; electronic modules to increase the interdisciplinary skills in the areas of chemistry, biology, physics and mathematics; Internet-based interactive learning to teach concepts in science and mathematics; the establishment of teaching/learning strategies designed to improve the academic performance; and the development of technological information skills to provide students with the opportunity to use electronic information in a more effective and critical manner.

STUDENT EXCHANGE PROGRAM

The Student Exchange Program is a consortium of several worldwide recognized universities that gives students the opportunity to spend a semester or year at an accredited institution in a foreign country. Credits taken at the university will be transferrable to UPRA. The Program allows students to know other cultures and educational systems.

The Program office provides information on the application process, financial aid and academic advisement to interested students.

COOP COURSE INTD 4995

UPRA COOP Course INTD 4995 is an academic opportunity that enables undergraduate students from all departments to complement formal education with practical work experience directly related to student's academic major. CO-OPS can complete a maximum of three terms work experiences or interships. The applicant must possess a 2.50 GPA to qualify for the program. COOP student are classified as full time students regardless that the course in only three credits.

DIVISION OF CONTINUING EDUCATION AND PROFESSIONAL STUDIES (DCEPS)

VISION

Become the means over which the Institution keeps strong ties with its graduate students; fulfills the mission of paying attention to the higher education needs in the northern-central area; and its commitment in the continuous search for new ways of dynamic responses of present and future challenges and opportunities. This relationship becomes real through a pertinent, excellent, extended and dynamic offering with high quality services for a professional and personal development of non traditional students.

MISSION

Offer innovative programs and academic activities of excellence, with or without academic credits leading to helping life long learning needs. The Department of Continuing Education and Professional Services (DECEP) guarantees and perpetuates the mission of the University of Puerto Rico at Arecibo, its incorporation into global education, and its contribution to the socioeconomic and cultural development, as well as taking care of the immediate needs of the areas it serves in a fast and dynamic way.

SERVICES

DCEPS offers the following services:

- Professional and personal improvement courses
- Professional certifications
- Seminars
- Workshops
- Trainings
- Conferences
- Continuing education activities sponsored by non profitable organizations, departments or offices of the university system with DECEP as a co-sponsor.

To guarantee a quality of service, resources at DECEP are highly qualified in their field of expertise and hold a broad field work experience.

PROGRAMS ASSIGNED TO DECEP

- PREAS - Pre-university Program for Academically outstanding students
- CCPNT - Center for Early Childhood Teaching
- Educational Services Programs for Correctional Institutions in Puerto Rico
- University Articulated Program
- Short term courses, Workshops, Seminars, Exam Reviews and Professional Certificates
- Business Courses
- UNEX or Extended University: Offers courses not in a curricular sequence, programs and certificates to non traditional students.

Schedule

Monday through Friday: 8:00 am - 12:00 pm and 1:00 pm - 6:30 pm

Saturday: 7:30 am - 12:00 pm

Contact Information

(787) 879-1118 (Phone)

(787) 878-4146 (Phone and Fax)

(787) 815-0000 Ext. 3200 and 3210

Email: infodecep.arecibo@upr.edu

Webpage: decep.upra.edu

INSTITUTIONAL DISTANCE EDUCATION PROGRAM

The Institutional Distance Education Program was established in July, 2014. At the present, a variety of courses have been designed to be offered in. These courses are identified in the institutional web page and in the page of the respective academic department. They are taught in both traditional and distance learning educational modalities (including hybrid).

Mission: To establish the Institutional Distance Education Program (IDEP) at the University of Puerto Rico at Arecibo.

Goal Institutional Distance Education Program: Enrich the academic offer by creating long distance courses and by training the teaching staff in nontraditional instructional modalities.

Distance Education Program Objectives:

- Design and implement courses to be offered through the Institutional Distance Education Program (IDEP).
- Train faculty members for:
 - Developing the proper competencies of a distance/hybrid educator-tutor.
 - Structure educational experiences, create teaching materials and evaluation sources for a proper virtual pedagogical environment.
 - Plan and integrate all TICs and non-traditional educational modalities/approaches into the educational experience.
 - Answer the needs as well as academic and professional interests of non-traditional students.

STUDENT SERVICES

FINANCIAL AID

The Financial Aid Office's principal function is to help students deal with socio-economic problems that may affect their academic performance. This function is performed through an extensive financial aid program. The resources for this program come from: the U.S. Government (federal funds), the Government of the Commonwealth of Puerto Rico (state funds), and private entities.

FEDERAL AID

Pell Grant

- Serves as the base to determine eligibility for the Financial Aid Programs
- Can be applied for through the Federal Student Aid Application, which students may obtain in the Financial Aid Office of the University, the Office of the Educational Opportunities Center (COE), in area high schools, and, online, at www.fafsa.gov.
- The amount granted depends on the eligibility determined by the federal government and the number of credits in which students are enrolled.
- Eligibility ends when students complete the requirements for the degree they are registered for, or may be prolonged up to 150% of the time allotted to complete a degree.
- To continue their eligibility to this and other sources of Title V aid, students must show satisfactory academic progress (See Norms for Academic Progress to Determine Eligibility for Financial Aid Programs.).

Supplementary Federal Grant (FSEOG)

- Funds reserved for students with the greatest economic need.
- Students registered for six (6) credits or more qualify for this aid, but students carrying a full academic load (12 or more credits) have priority.

Federal Work-Study Program (FWSP)

- Matched federal and institutional funds.
- Students are assigned work related to their field of study, whenever possible.
- Students are paid the Federal minimum wage.
- Students work within the university.

Stafford Loan Program

- It is a loan that does not accrue interests while the student is an active student at an accredited university, with an academic load of no less than six (6) credits.
- The amount of the loan fluctuates between \$3,500 and \$5,500, depending on the students' academic level (undergraduate, graduate, professional certificate, etc.).
- Recipients will begin paying the loan six (6) months after either finishing their studies, or when they leave the university, or when they register for fewer than six (6) credits.
- Before disbursing the loan, the Institution can subtract from the loan amount any outstanding debt that students have with the Institution.

Years of Undergraduate Study	Maximum Loan
First Year	\$3,500
Second Year	\$4,500
Third and Fourth Years	\$5,500

- The amounts mentioned will never exceed the cost of studies (minus other financial aids received by the student)

STATE AID

Legislative Scholarships Program

- Students registered for six (6) credits or more qualify, but students with a full academic load (12 credits or more) have priority.
- The amount awarded will depend on the number of credits in which students are enrolled.

Private Scholarships*

- Abbott Laboratories
- Army Emergency Relief
- Banco Popular – Richard Carrión Jr. Trust
- Banco Santander
- Citizens Scholarship Foundation of America
- Clara Abbott Foundation
- Cornell Tuition Scholarship
- Fondo Rafael Carrión, Jr.
- Gates Millennium Scholar
- Johnson & Johnson
- José Jaime Pierluisi Trust
- Methodist Church
- Phillips Van Heusen Corp.
- Presbyterian Church
- Ronald McDonald Children's Trust
- Rosa E. Axtmayer Trust
- Upjohn Manufacturing Co.

General Requirements for Eligibility to Receive Financial Aid

1. Being admitted to an institution in a program leading to an academic degree.
2. Being a citizen of the United States of America or have a permanent resident status.
3. Maintaining satisfactory academic progress (see **Norms for Academic Progress to Determine Eligibility for Financial Aid Programs**).
4. Submitting the Application for Financial Aid and the required documents on time.
5. Demonstrating financial need according to federal and state regulations.

* The application for private funds must be made directly to the granting organization.

6. Accepting in writing any offer of financial aid before disbursement of the aid money.
7. Signing documents related to:
 - Drugs and Alcohol Abuse
 - Educational Purpose
 - Information related to scholarships
 - Reimbursement Policy
 - Delinquency on payment of loans
8. Maintaining satisfactory academic index in accordance with the Satisfactory Academic Progress Policy
9. Keeping the Institution informed of any change of address or status related to loans.

POLICY AND NORMS FOR ACADEMIC PROGRESS TO DETERMINE ELIGIBILITY FOR FINANCIAL AID PROGRAMS IN THE UNIVERSITY OF PUERTO RICO (Certification 111 2013-14)

The policy and norms for academic eligibility aim to insure the best possible use for financial aid programs and encourage students who benefit these forms of aid to maintain adequate academic progress, both quantitative (academic index) and qualitative (progress towards obtaining a degree). This policy and these norms are applicable only to undergraduate students, i.e. those enrolled in associate degree or bachelor's degree programs.

Among the norms which determine eligibility for participation in financial aid program are:

- Students must be officially enrolled in a program leading to a degree.
- Students may attempt up to 150% of the credits required by their academic program. This percentage applies even if students have not previously received financial aid.

Years of Academic Study (The year of study is defined as a natural academic year)	Minimum Average (Qualitative Criterion)	Minimum Percentage of credits attempted and approved in the year (Qualitative Criterion)
First Year	1.40	57%
Second Year	1.60	67%
Third Year	1.80	67%
Fourth Year or more	2.00	67%

CURRICULUM AND COURSE SEQUENCE CONTINUITY TO ENSURE STUDENTS COMPLETION OF THE ACADEMIC PROGRAM WITHIN THE REQUIRED TIME FRAME

The University of Puerto Rico at Arecibo uses several mechanisms to guarantee the continuity of the curricular sequence. All the curricular sequences have been designed so that students can complete their academic preparation within the time stipulated by their academic program. The courses in the curricular sequence are distributed in academic terms, according to their level of complexity and following the prerequisites and corequisites established for each course. Curricular sequences also comply with the U.S. Department of Education's guidelines for the time and a half period of completion, according to the level of the program: for associate degree programs in a maximum of three years and for baccalaureate programs, a maximum of six years.

Several mechanisms are employed to help students comply with their curricular sequence through several guiding mechanisms from the moment they are admitted to the Institution.

1. Admissions Office

This office provides students guidelines and information about their program's curricular sequence.

2. Integration into University Life Conference

This activity is organized to inform new students about all the student services available in the Institution and guide them through their curricular sequence. Several student services offices which will include licensed academical counselors present the Institution's primary services available to support students as they achieve their goal of completing their career studies in time or within a reasonable time. Additionally, each academic department discusses with their student the curricular sequence and clarify doubts about it.

3. Academic Advising

Each faculty member is responsible for programming office hours and providing academic advice to students. The University of Puerto Rico General Regulatory Handbook (Certification 160 (2014-2015) establishes in Article 65, Section 65.2, that the faculty will dedicate six hours a week to attend to each individual student's academic needs. This includes academic counseling.

4. Support of the Educational Services Program

Support of the Educational Services Program is a program of the U.S. Department of Education that assists students who meet specific needs criteria. The goal is to increase retention and graduation rates. Participants receive academic, personal, and vocational counseling services. They also receive individual and group tutoring in various subjects, according to their academic need in English, Spanish, mathematics, accounting, and science.

5. Services of the Department of Counseling and Psychological Services

This department provides academic, vocational, and personal guidance to the entire student community. External services are coordinated through the Dean of Students Affairs to help improve the emotional, social, and economic stability of the student body.

6. Support from the Tutoring and Mentoring Program

This program provides services to students to optimize their academic performance, so that they successfully complete their curricular sequence. The tutorials are offered virtually and face-to-face.

7. SITA Program

This program is designed to alert the Institution about students who are at risk. In this way, a network of supporting services is offered to help these at-risk students to complete their curricular sequence so they can meet the grade point average rate required for retention.

TITLE IV REIMBURSEMENT POLICY

Title IV Funds Refund Policy applies to students who, formally or informally, totally withdraw from the university prior to completing 60% of the academic year or pay period and are recipients of Title IV funds, such as: William D. Ford Loans subsidized and unsubsidized, Pell Grant, and FSEOG, among others.

The Fiscal Office of Financial Aid is responsible for computing the amount of Title IV funds earned or that do not correspond to the student, identifying the institutional portion of the funds to be reimbursed to the Title IV programs. This refund shall be made in a specific order, both for the funds returned by the institution, as well as the funds reimbursed by the student. The institution will, in principle, undertake the determined fiscal responsibility and then the student will reimburse the part that corresponds to him or her.

UPRA Arecibo utilizes the program or tool provided by the US Department of Education as a mechanism to calculate the return of funds that apply.

Step 1

The student will complete Total Withdrawal Form (*Formulario de Baja Total*) provided by the Registrar's Office and go to the Fiscal Office of Financial Aid. For each type of Title IV Fund, the official will identify the amount that the student has received, the amount that could have been disbursed, as well as the tuition fees.

Step 2

It is understood that the date of withdrawal is the earliest date on which the institution is aware of the student's intent to withdraw, either on the date the withdrawal process begins or the date that the professor indicates as last date of attendance, according to the procedure established for the Faculty in Circular Letter DAAC-2015-2016-03.

Each semester the dates of commencement and termination of classes as well as recess periods of more than five days will be registered in the application for computing. Once the date of withdrawal is determined, the program calculates the percentage of attendance reached by the student. If the attendance is less than 60%, the same percent applies to the financial aid that the student is entitled to. If the percentage of attendance is more than 60%, it is considered rightful to grant the student the full amount for the semester or 100%.

Step 3

In the calculation, it will be determined the amount of financial aid that corresponds to the student. This will be done by applying the percentage of attendance to the total aid granted to the student for the semester whether they are paid or unpaid.

SERVICE OFFICE FOR DISABLED STUDENTS AND LAW 51 PROGRAMS

Goals:

- Promote the development of an institutional policy to guide the assistance services to the disabled members in teaching and research.
- Identify the College curricula for basic content areas to include the needs of the disabled members and establish a source bank of professional and community members capable of offering services to disabled people.
- Establish a liason with the corresponding agencies which offer services to disabled people.
- Promote and distribute information about Law 51.

Responsibilities

- Promover la investigación y adaptación de tecnología moderna que favorezcan las necesidades de la población de personas con impedimentos.
- Capacitar un número razonable de profesionales que brinden servicios a las personas con impedimentos de acuerdo a la demanda por estos.
- Proveer, en coordinación con Universidades especializadas en el trabajo con estudiantes con impedimentos y otras agencias, información y servicios actualizados como parte de la educación continua.

Services

- Coordinate cases with special needs
 - Establish links with the agencies offering student services and for people with disabilities.
 - Promote a more inclusive environment.
- Facilitate the integration into college life and provide equal rights among the students participating in the program through:
 - Counseling on the rights and benefits offered in the program.
 - Coordination of special needs as needed in every condition.
 - Pre-registration and Early Registration.
 - Referrals to the Vocational Rehabilitation Office.
 - Referrals to the corresponding service offices from the University of Puerto Rico at Arecibo.

ACADEMIC ADVISEMENT PROGRAM

The UPR General Rules and Regulations Handbook defines academic counseling as the “direct advice that an expert professor offers students on the selection, elaboration and coordination of their academic programs” (Article 100, Section 100.11).

The concept of academic counseling refers to the planning activities of the academic curriculum that must be followed by students. These activities include the planning of the student schedule, orientation about changes in student schedules (registration, withdrawal from courses and re-classifications) and the interpretation of the regulations and norms governing registration, re-classification, transfers, procedures, retention, probationary status, partial withdrawals, total withdrawal, satisfactory academic progress and class attendance.

In general, academic counseling refers to the advice given to students on how to complete the requirements for the desired degree in the allotted time, according to its curriculum and institutional norms. Every department designates academic advisors for students enrolled in its programs.

DEPARTMENT OF COUNSELING AND PSYCHOLOGICAL SERVICES

The Department promotes and facilitates student development in educational, vocational and personal areas using counseling and psychotherapy.

Services

The Department provides the following services:

1. Educational counseling
2. Vocational counseling
3. Personal counseling
4. Psychological services
5. Psychoeducational workshops
6. Career Center

Staff

Cordero Montalvo, Pilar, Ed. D. in Education con especialidad en Consejería y Orientación, Universidad Interamericana de Puerto Rico, Consejera IV.

Guzmán Faría, Elba, Ed.D. M.R.C., M.P.A., Doctorado en Educación con especialidad en Liderazgo Educativo, Universidad del Turabo; Maestría en Consejería en Rehabilitación; Maestría en Administración Pública, Universidad de Puerto Rico, Consejera II.

Martir Reyes, Frances. Ed.D., Maestría en Educación con especialidad en Consejería, Universidad Interamericana – Recinto de San Germán, Consejera I.

Medina Méndez, Celia, M.Ed., Maestría en Educación con especialidad en Orientación y Consejería, Pontificia Universidad Católica de Puerto Rico, Consejera III.

Rodríguez Jiménez, Jesús, M.R.C., Maestría en Consejería en Rehabilitación, Universidad de Puerto Rico, Consejero IV.

Serpa Mercado, Arlyn. M.Ed., Maestría en Consejería y Orientación. Universidad Central de Bayamón., Consejera I.

Vélez Mendoza, Edith, Ph.D., Doctorado en Filosofía, Psicología Clínica, Universidad Carlos Albizu, Psicóloga IV.

MEDICAL SERVICES

Medical services are available at the Infirmary, located in the Student Center. The staff includes nurses and medical doctors (on a part-time basis).

During registration all students must present evidence of health insurance. UPRA offers a health insurance plan with a various options of coverage for students who are not insured. University employees are exempt from this requirement.

ATHLETIC ACTIVITIES

The Athletic Department promotes student participation in athletic activities according to individual interests. These activities include interuniversity, intramural and recreational events. The interuniversity phase provides opportunities to students who possess outstanding athletic abilities to represent UPRA in tournaments sponsored by the Interuniversity Athletic League.

The intramural phase provides students, alumni and university personnel the opportunity to participate in sports competitions with other members of the university community. The recreational phase allows students to participate in such events as chess and table tennis tournaments, among others.

Athletic facilities at the University include an indoor court (used for volleyball, basketball, Olympic wrestling and judo), a weight room, a sport therapy room, a tennis court, a softball field and a track and field/football field.

SOCIAL AND CULTURAL ACTIVITIES

The Office of Social and Cultural Activities aims to expand academic life with the development of cultural, civic and social activity. The Office sponsors a yearly activity program including lectures, concerts, plays, art exhibits, film and social events.

ID CARD

Students must always carry their personal non-transferable ID card. They must present the card when required by any member of the Faculty, Administration or the University Police.

At the beginning of the school year, a period is announced when first year students may obtain their ID card. A student may obtain a replacement for a lost card in the Office Photographic after payment of the required fee.

STUDENT ORGANIZATIONS

According to the UPR By-laws, all student organizations must be evaluated and certified by a committee appointed to that effect. This committee includes two faculty members, a representative from the Office of the Dean for Student Affairs, and two student members appointed by the Student Council from among its members.

Activities sponsored by student organizations may not include advertisement for cigarettes, alcohol or drugs. Among active organizations, recognized by the University are the following:

- AGORA UPRA (Sociales)
- American Chemical Society-ACS (Physics/Chemistry Department)
- AMSA (Biología)
- Asociación de Fotografía Ansel Adams-AFAA (Comunicación Tele-Radial)
- Asociación de Relaciones Públicas y Publicidad Vértice (Comunicación Tele-Radial)
- Asociación Estudiantil Biología (Biología)
- Asociación Estudiantil de Finanzas y Economía-AEFE (ADEM)
- Asociación Estudiantil de Profesionales Administrativos (AEPA)
- Asociación Phi Beta Lambda (ADEM)
- Asociación Teatro Universitario Histriones (Humanidades)
- Club de Leones UPRA (Biología)
- Club Rotoract (Química)
- Confraternidad Cristiana (Pre Intervención)
- Cruz Roja Americana de UPRA (Servicios Médicos)
- Estudios Iberoamericanos (CISO)
- Estudios Tecnología de ADEM (ADEM)
- FADU (Admisiones)
- FPA (Biología o Química)
- Fraternidad Phi Sigma Alfa (Biblioteca)
- Fraternidad Phi Omega Sigma (Servicios Médicos)

- Medlife (Biología)
- National Association of Hispanic Journalism-NAHJ (Comunicación Tele-Radial)
- Nursing Association of UPRA-NAUPRA (Enfermería)
- Programa Estudios de Honor-PEH (Decanato Académico)
- UPRA – Robotics Team (Ciencias Cómputos)
- UPRA College Republicans (Biología)
- UPRA Dance Team (Comunicación Tele-Radial)

ARTISTIC GROUPS

- Histriones Student Theater Group
- Tuna Estudiantil
University Student Band
- Concert Choir
- UPRA Women’s Choir
- UPRA Dancers

VOCAL GROUPS

CONCERT CHOIR

The concert choir was founded in 1979. The group is part of the Humanities Department. Its members are distinguished by their love of music, their discipline and their commitment with the Institution.

PURPOSE

The main purpose of the Concert choir is to offer an alternative to students who, through a rigorous audition, show their aptitude for singing and the choral discipline. These students are offered the experience of performing a varied repertoire including spiritual or sacred music and non religious or secular music belonging to different historical periods, as well as Latin American and Puerto Rican folk music.

The concert choir has performed in many international tours in diverse countries such as the Dominican Republic, Venezuela, Panama, Mexico and the United States, among others. It has also participated in different concerts and festivals in Puerto Rico as part of their cultural work.

FEMALE CHOIR

The female choir is a combination of unique same voices maintaining a string distribution of soprano, mezzo soprano and alto singers. The choir is distinguished by their sonority and tessitura which are practically devoted to a G musical key. The group offers its members, with a singing aptitude, with little or none choir experience, the opportunity to begin in the art of an a cappella musical choir.

PROGRAM ADMISSION REQUIREMENTS

- Be an active student of the University of Puerto Rico at Arecibo.
- Be present at an audition.
- Have taken or be enrolled in the Theory and Dictation I & II (MUSI 3175 and MUSI 3176).
- Be available to comply with the choir's rehearsal and activities schedule.
- In some cases, a letter of recommendation could be requested.

BENEFITS

Students participating in the choir program could receive an exemption to the registration payment, only if they comply with the following requirements among others, as established in the Enrollment Rights Institutional Policy of the University of Puerto Rico (Vice presidency of Academic Affairs, March 9, 2011) or with the current document:

- Be a member of the choir for one consecutive year.
- Have a minimum of 24 approved credits.
- Must not exceed three (3) absences during the semester.

HISTRIONES STUDENT THEATER GROUP

The Histriones University Theater group is an academic and student organization part of the Humanities Department which is part of the Deanship for Student Affairs and the Deanship for Academic Affairs. Histriones has been recognized by the Chancellor's office and by every university organism as the official theater group of the University of Puerto Rico at Arecibo.

FOUNDATION

The Histriones University Theater group was founded in 1984. The Theater Workshop of the Humanities Department was the first name given to the group. In the 1990's the group became registered as a student association. The student's members were given a scholarship, equal to the one granted to athletes.

VISION

Become one of the highest quality theater groups and receive exposure in the UPR system as well as internationally.

MISSION

Develop the scenic art, from various perspectives, from all its members and present their work to the community outside and inside the campus.

GOALS

- Develop a pattern of theatrical and academic activities, allowing the development and appreciation of the arts through theatrical productions, having Histriones as the center for dramatic and artistic performance.
- Contribute in the recognition of college theatrical arts by the community inside and outside of the university.

OBJECTIVES

- Foster the appreciation and respect for the theater art.
- Organize and arrange everything related with the institutional theatrical activities from an academic, social and cultural perspective.
- Contribute in the recognition of the theater college arts by the members of the community, inside and outside the campus.
- Develop theatrical performances as an educational, cultural and social means.
- Enrich the theatrical cultural tradition of our members through educational means and the teaching of the theater art as an expression of creativity and thinking of human beings.
- Provide every college student with an artistic and cultural experience which will contribute to their cultural, academic and personal development.
- Represent UPRA in theatrical festivals and activities.

ACADEMIC PROGRAMS

There are four types of academic programs in the University of Puerto Rico at Arecibo.

1. Bachelor's Degrees
2. Associate's Degrees
3. Articulated Transfer Programs
4. Minors Degrees

BACHELOR'S DEGREE PROGRAMS

The following four-year bachelor's degree programs are offered in UPRA:

- Arts in Education with major in Physical Education for Elementary Level
- Arts in Elementary Education
- Science with major in Microbiology
- Business Administration with major in:
 - Accounting
 - Finance
 - Management
 - Marketing
- Sciences with major in Computer Science
- Sciences in Nursing
- Information Technology Management and Administrative Processes
- Social Sciences with major in
 - Iberoamerican Studies
 - Industrial Organizational Psychology
- Technology in Industrial Chemical Processes
- Television and Radio Communication Technology

ASSOCIATE DEGREE PROGRAMS

The Associate Degree Programs provide students with the opportunity to complete a two year program that prepares them for immediate employment. Students may apply for admission to a bachelor's degree program in UPRA or another branch of the UPR.

UPRA offers the following Associate Degree programs:

- Chemical Engineering Technology
- Nursing
- Veterinary Technology

ARTICULATED TRANSFER PROGRAMS

The University of Puerto Rico at Arecibo offers the following two year articulated program. This program allow students to begin their academic careers in UPRA and later transfer to another unit of the UPR System to complete their bachelor's degree along with their respective majors.

Students are responsible of verifying the curricular sequence or the requisites of the academic programs have been changed.

ARTICULATED TRANSFER PROGRAM TO UPR-MAYAGÜEZ

- **Engineering**
 - Chemical Engineering
 - Civil Engineering
 - Computer Engineering
 - Electrical Engineering
 - Industrial Engineering
 - Land Surveying and Topography
 - Mechanical Engineering

COURSES OFFERED BY THE ACADEMIC DEPARTMENTS

BIOLOGY

BIOL – Biology
 CIBI – Biological Sciences
 CIIN – Integrated Science
 SAAN – Animal Health

BUSINESS ADMINISTRATION

ADMI – Administration
 BASE – Banking and Insurance
 CONT – Accounting
 LEGA – Legal Aspects in Business
 ECON – Economics
 ESTA – Statistics
 FINA – Finance
 GERP – Production Management
 MERC – Marketing
 REHU – Managment

COMPUTER SCIENCE

CCOM – Computer Science

SICI – Computerized Information Systems

EDUCATION

EDES – Special Education
EDFI – Physical Education
EDFU – Fundamentals of Education
EDPE – Programs and Teaching Education
TEED – Educational Technology

ENGLISH

INCO – Business English
INGL – English

HUMANITIES

ARTE – Art
ESIN – Puerto Rican Studies
FILO – Philosophy
FRAN – French
HIST – History
HUMA – Humanities
INDT – Feminist Writing
MUSI – Music
LITE – Literature
TEAT – Theater

MATHEMATICS

MATE – Mathematics

NURSING

ENFE – Nursing

INFORMATION TECHNOLOGY MANAGEMENT AND ADMINISTRATIVE PROCESSES

GTEC – Information Technology Management and Administrative Processes

PHYSICS AND CHEMISTRY

ASTR – Astronomy
CIFI – Physical Science
FISI – Physics
INCI – Civil Engineering
INEL – Electrical Engineering
INGE – General Engineering

QUIM – Chemistry
TEQU – Chemical Engineering Technology

SOCIAL SCIENCE

ANTR – Anthropology
CIPO – Political Science
CISO – Social Sciences
ECON – Economics
ESIN – Latin American Studies
GEOG – Geography
GERO – Gerontology
HIST – History
PSIC – Psychology
SOCI – Sociology

SPANISH

ESCO – Business Spanish
ESPA – Spanish
LITE – Literature

TECHNOLOGY IN TELEVISION AND RADIO COMMUNICATIONS

AGRA – Graphic Arts
COMU – Communications
PUCO – Commercial Advertising

GENERAL EDUCATION PROGRAM DEPARTMENTS

The Institutional General Education Policy of the University of Puerto Rico at Arecibo is defined in Certification Number 2005-06-17 of UPRA Academic Senate. This policy identifies a series of interdisciplinary competencies that all students will have developed upon completion of their university studies as a result of their holistic education: (a) oral and written communication skills in Spanish and English; (b) quantitative and scientific reasoning skills; (c) logical and critical thinking skills; (d) information skills; (e) collaborative work skills; (f) historical and sociocultural knowledge; (g) environmental awareness; (h) values, and (i) knowledge of self.

The General Education Component for Associate Degree Programs in the University of Puerto Rico at Arecibo (UPRA Academic Senate Certification 2013-14-10) establishes 18 credits on general education for the associate degree programs.

Beginning in 2008-2009 all students enrolled in a bachelor's degree program have to take a minimum number of courses in General Education. The same rule applies to all students enrolled in an associate degree program since August, 2014.

BACHELOR DEGREE GENERAL EDUCATION MINIMUM REQUIREMENTS

COURSES	CREDITS
English	9
Humanities	6
Mathematics	6
Natural Sciences	6
Social Sciences	6
Spanish	9
TOTAL	42

ASSOCIATE DEGREE GENERAL EDUCATION MINIMUM REQUIREMENTS

COURSES	CREDITS
English	3
Humanities	3
Mathematics	3
Natural Science	3
Sciences	3
Spanish	3
TOTAL	18

SPANISH⁵

All students will take six (6) credits in Spanish courses. The course will depend on their score in the Spanish section of the Evaluation Test for College Admissions (PEAU for its Spanish

⁵ *Courses bearing an asterisk have prerequisites.

acronym). The Developmental Spanish (ESPA 0060) course will not count towards meeting this requirement.

COURSES	CODES	CREDITS
Basic Spanish I	ESPA 3101	3
Basic Spanish II	ESPA 3102*	3
Honor's Spanish I CEEB: 600-800	ESPA 3111	3
Honor's Spanish II	ESPA 3112*	3

To comply with the additional three (3) credits required in Spanish for General Education, students will choose from among the following courses. Some curricula already require additional courses in Spanish which fulfill this requirement. Students should consult their academic advisors and examine the curricular sequence for the program in which they are enrolled.

COURSES	CODES	CREDITS
Psychology of Communication I	ESCO 3001	3
Psychology of Communication II	ESCO 3002	3
Oral Communication	ESPA 3007	3
Writing and Style	ESPA 3208	3
Business Expression and Communication	ESPA 3215	3
Introduction to Spanish Literature I	ESPA 3211	3
Introduction to Spanish Literature II	ESPA 3212	3
Film and Literature	ESPA 3305	3
Spanish-American Literature I	ESPA 4221	3
Spanish-American Literature II	ESPA 4222	3
Puerto Rican Literature I	ESPA 4231	3
Puerto Rican Literature II	ESPA 4232	3
Contemporary Puerto Rican Literature	ESPA 4233	3
(Compendium) Puerto Rican Literature	ESPA 4267	3

ENGLISH⁶

All students will take six (6) credits in English. The courses will depend on their score in the English achievement section of the Evaluation Test for College Admissions (PEAU for its Spanish acronym).

COURSES	CODES	CREDITS
***Basic English I	INGL 3101	3
Basic English Laboratory I (co-requisite of INGL 3101)	INGL 3113	0
Basic English II	INGL 3102*	3
Basic English Laboratory II (co-requisite of INGL 3102)	INGL 3114	0
Intermediate English I (CEEB: 580-679)	INGL 3103	3
Intermediate English II	INGL 3104*	3
Honor's English I (CEEB: 680-800)	INGL 3011	3
Honor's English II	INGL 3012*	3

To comply with the additional three (3) credits in English required for General Education, students will choose from among the following courses. Some curricula already require additional courses in English which fulfill this requirement. Students should consult their academic advisors and examine the curricular sequence for the program in which they are enrolled.

COURSES	CODES	CREDITS
**Business English I	INCO 3005	3
** Strategic Business Communication	INCO 4008	2
**Report Writing	INCO 4006	2
Oral and Written English I	INGL 3021	3
Grammar and Composition I	INGL 3201	3
Grammar and Composition II	INGL 3202*	3
Introduction to Literature I	INGL 3221	3
Introduction to Literature II	INGL 3222*	3
Conversational English	INGL 3093	3
Conversational English for Professionals II	INGL 3094*	3
English for Public Communication	INGL 3061	3
English for Science and Technology I	INGL 3015	3
Conversational English for Secretaries I	INCO 3025	1
Introduction to Creative Writing	INGL 3238	3
Conversational English for Study and Travel	INGL 3117	3
Radical Women's Writing in the 20th and 21st Centuries	INGL 3230	3
Gay and Lesbian Narratives	INGL 3375	3

1. **Courses bearing an asterisk have prerequisites.*

2. *** Courses bearing two asterisks are tailored to Business and Administrative Assistant Majors*

3. **** Students who obtain 0-449 in the CEEB exam, are encouraged to register in INGL 3101 Q sections*

HUMANITIES

Students will take at least six (6) credits in the Humanities from among the following courses. Some curricula already require courses in Humanities which fulfill this requirement. Students should consult their academic advisors and examine the curricular sequence for the program in which they are enrolled. The courses ARTE 3125, 3135 y 3816; MUSI 3175 y 3176; TEAT 3011, 3012, 3030 and 3160 are not part of the General Education component. These courses may be taken as free electives.

COURSES	CODES	CREDITS
Art Appreciation	ARTE 3115	2
History of Art	ARTE 3116	3
Art in Puerto Rico	ARTE 3118	3
Seminar of Puerto Rican Studies	ESIN 4001	3
Introduction to Philosophy I	FILO 3001	3
Introduction to Philosophy II	FILO 3002	3
Ethics	FILO 3005	3
Logic I	FILO 4006	3
Bioethics	FILO 4027	3
History of Puerto Rico I	HIST 3241	3
History of Puerto Rico II	HIST 3242	3
History of the Renaissance	HIST 3165	3
Social and Cultural History of Puerto Rico	HIST 3177	3
Social and Cultural History of the United States	HIST 3179	3
History of the United States from the Colonial Period to the Civil War	HIST 3111	3
History of the United States after the Civil War to the Present	HIST 3112	3
Western Culture I	HUMA 3101	3
Western Culture II	HUMA 3102	3
Western Culture III	HUMA 3201	3
Western Culture IV	HUMA 3202	3
Seminar Web 2.0 Tools Research Process in the Humanities	HUMA 3145	3
Summer in Europe	HUMA 3010	6
Feminist Writings	INTD 3046	3
Modern Literature	LITE 3011	3
Contemporary Literature	LITE 3012	3
Mythology in Western Literature	LITE 3035	3
Digital Literature	LITE 3055	3
Transmedia storytelling: Epic, myths, folktales, comics, films and videogames	LITE 4176	3
The History of Music	MUSI 3225	3
Music Appreciation	MUSI 3235	2
Appreciation of the Dramatic Arts	TEAT 3025	3

MATHEMATICS

All students will take six (6) credits in Mathematics courses. The course will depend on their score in the Mathematics section of Evaluation Test for College Admissions (PAA for its Spanish acronym). The Developmental of Basic Mathematical Skill (MATE 0008) course will no count towards meeting this requirement.

- Pre-Calculus I (MATE 3171) and Quantitative Methods for Business Administration I (MECU 3031) require a minimum *score* of 595 on the Mathematics Achievement section of the Evaluation Test for College Admissions (PAA for its Spanish acronym), except for students of the Bachelor's Degree of Technology in Industrial Chemical Processes. Students who do not have this *score*, may fulfill the requirement by passing Development of Basic Mathematical Skill (MATE 0008).

Student whose curriculum only requires three (3) credits in Mathematics, may fulfill the General Education requirements will choose from among the following courses:

COURSES	CODES	CREDITS
Introductory Mathematics I	MATE 3001	3
Algebra	MATE 3004	3
Introduction to Statistics with Computers	MATE 3026	3
Health Related Mathematics	MATE 3035	3
Fundamentals Concepts Arithmetic and Algebra for Elementary School Teachers	MATE 3131	3
Fundamentals Concepts of Geometry, Probability and Statistics for Elementary School Teachers	MATE 3132	3
Precalculus I	MATE 3171	3
Precalculus II	MATE 3172	3
Quantitative Methods for Business Administration I	MECU 3031	3
Quantitative Methods for Business Administration II	MECU 3032	3

NATURAL SCIENCES

Students will take at least six (6) credits in the Natural Sciences from among the following courses. Some curricula already require courses in Science which fulfill this requirement. Students should consult their academic advisors and examine the curricular sequence for the program in which they are enrolled.

BIOLOGY⁷

COURSES	CODES	CREDITS
Basic Topics in Biology	BIOL 3008	3
General Biology I	BIOL 3011	4
General Biology I Laboratory (co-requisite of BIOL 3011)	BIOL 3013	0
Fundamentals of General Biology	BIOL 4001	4
Fundamentals of General Biology Laboratory (co-requisite of BIOL 4001)	BIOL 4002	0
Environmental Science	BIOL 4055	3
Fundamentals of Biology I	CIBI 3001	3
Fundamentals of Biology II	CIBI 3002*	3

PHYSICS-CHEMISTRY⁸

COURSES	CODES	CREDITS
Descriptive Astronomy	ASTR 3005	3
General Chemistry I	QUIM 3001 / QUIM 3131	4
General Chemistry Laboratory I (co-requisite of QUIM 3001)	QUIM 3003 / QUIM 3133	0
General Chemistry II	QUIM 3002* / QUIM 3132	4
General Chemistry Laboratory II (co-requisite of QUIM 3002)	QUIM 3004* / QUIM 3134	0
Introduction to Physical Sciences I	CIFI 3001	3
Introduction to Physical Sciences II	CIFI 3002*	3

⁷ *Courses bearing an asterisk have prerequisites.

SOCIAL SCIENCES

Students will choose of the following courses as part of their six (6) credits General Education requirement. To fulfill the minimum credits six (6) credits in Social Sciences, students must take three (3) credits among the following introductory courses⁹.

COURSES	CODES	CREDITS
Introduction to Social Sciences I	CISO 3121	3
Introduction to Social Sciences II	CISO 3122	3

To complete the additional three (3) credits, students may choose from among the following courses. Some curricula already require additional courses in Social Sciences, which fulfill this requirement. Students should consult their academic advisors and examine the curricular sequence for the program in which they are enrolled.

COURSES	CODES	CREDITS
Introduction to Economics I	ECON 3005	3
Principles of Economics I	ECON 3021	3
Principles of Economics II	ECON 3022	3
Elements of Geography	GEOG 3155	3
Statistical Reasoning	CISO 3155	3
Sociocultural Anthropology	ANTR 3006	3
Principles of Sociology	SOCI 3245	3
Principles and Problems of Political Science	CIPO 3011	3
Introduction to Psychology	PSIC 3003	4
General Psychology	PSIC 3005	3
Industrial Organizational Psychology	PSIC 3116	3
Social Psychology	PSIC 3006	3
Group Dynamics	PSIC 3048	3
Sociological Principles of Environmental Education	SOCI 1001	3

⁹ Students in the Industrial Organizational Psychology and Ibero-American Studies fulfill their requirements by taking courses that are more specialized in Social Sciences. This does not either apply to students conducting their bachelors in Business Administration, who will take ECON 3021 and ECON 3022, according to their curricular sequence.

ENGLISH DEPARTMENT

FACULTY

Alberdeston Coralín, Jane, Ph.D., *Assistant Professor*, Doctor of Philosophy in English with specialization in Creative Writing, Binghamton University (SUNY).

Garcés Valencia, Mateo, Ed.D., *Professor*, Doctor of Education, Curriculum and Teaching TESOL, Universidad de Puerto Rico, Río Piedras, M.A., Master of Arts, Education in TESOL, (Teaching English as a Second Language), Universidad de Puerto Rico.

González Méndez, Carlos, Ed.D., *Associate Professor*, Doctor of Education, Curriculum and Teaching TESOL, Universidad de Puerto Rico, Río Piedras, M.A.; Master of Arts, Education in TESOL (Teaching English as a Second Language), Universidad de Puerto Rico, Río Piedras.

Kelly-Cooke, Kevin, Ph.D, *Associate Professor*, UPR-Río Piedras Anglophone Caribbean Literature, University of Puerto Rico, Río Piedras

Morales Cruz, Priscilla, M.A., *Associate Professor*, Master of Arts, Education in TESOL (Teaching English as a Second Language), University of Puerto Rico.

Ramírez Morales, Jesús, M.A.E.E., *Assistant Professor*, Ph.D. Candidate of Philosophy in English with specialization in Linguistics of the English Speaking Caribbean (ABD), Universidad de Puerto Rico, Río Piedras Master of Arts, Education in English, Linguistics and Literature, Universidad de Puerto Rico, Mayagüez.

Santiago Pérez, Marisol, Ph.D, *Professor*, Ph.D. Philosophy in English with specialization in Linguistics of the English Speaking Caribbean, Universidad de Puerto Rico, Río Piedras, Master of Arts, Linguistics, Universidad de Puerto Rico.

Torres Santiago, Geissa, Ph.D., *Associate Professor*, Doctor of Philosophy in English with specialization in Linguistics of the English Speaking Caribbean, Universidad de Puerto Rico, Río Piedras.

LIST OF COURSES

INGL

INGL 0060: PRE-BASIC ENGLISH, three (3), three (3) contact hours per week. This course is designed for students who scored 450 or fewer points in the English portion of the CEEB. It aims to prepare them with the skills needed to perform at a satisfactory level in the Basic English course. It will focus on helping students acquire basic grammar, listen-speaking and reading-writing skills. This course can be taught in both traditional and distance learning educational modalities.

INGL 3011: HONORS ENGLISH I, three (3) credits, three (3) contact hours per week. Pre-requisite: a score of more than 690 in the English Achievement section of the CEEB. This first year English course designed for students who possess a higher command of the English language. The course presents a vision of various literary genres such as fiction, poetry, and the short story. This course can be taught in both traditional and distance learning educational modalities.

INGL 3012: HONORS ENGLISH II, three (3) credits, three (3) contact hours per week. Pre-requisite: INGL 3011. Other literary genres such as non-fiction and drama will be studied. This course can be taught in both traditional and distance learning educational modalities.

INGL 3015: ENGLISH FOR SCIENCE AND TECHNOLOGY, three (3) credits, three (3) contact hours per week. Pre-requisite: INGL 3101-3102, INGL 3103-3104 or INGL 3011-3012. This course is designed to help students enrolled in technological and scientific programs develop English skills and vocabulary to help them in their areas of study. This course can be taught in both traditional and distance learning educational modalities.

INGL 3021: ORAL AND WRITTEN ENGLISH I, three (3) credits, three (3) lecture and laboratory hours per week. Prerequisites: INGL-3102 or INGL 3104 or INGL 3112. Course designed for future elementary school teachers who have to teach all classes in the curriculum including English. The student learns identification and sound production, accentuation, rhythm, and intonation. Student will have practice in the laboratory in order to correct individual difficulties.

INGL 3061: ORAL AND WRITTEN ENGLISH FOR PUBLIC COMMUNICATION I, three (3) credits, three (3) contact hours per week. Pre-requisite: INGL 3101, INGL 3102. Offered to a limited number of students of public communication. The course teaches students to speak and write clearly and effectively, utilizing an oral and written communication approach and a program of laboratory experiences.

INGL 3062: ORAL AND WRITTEN ENGLISH FOR PUBLIC COMMUNICATION II, three (3) credits, three (3) contact hours per week. Pre-requisite: INGL 3061. Continuation of INGL 3061.

INGL 3093: CONVERSATIONAL ENGLISH, three (3) credits, three (3) contact hours per week. Pre-requisite: INGL 3092 or its equivalent. Practice to develop the skills for vocabulary acquisition. The class is held completely in English.

INGL 3094: CONVERSATIONAL ENGLISH FOR PROFESSIONALS, three (3) credits, three (3) contact hours per week. The course is designed to improve oral expression and to increase vocabulary through reading and discussion of literary and technical texts. This course will assist in the interpretation of English textbooks.

INGL 3101: BASIC ENGLISH I, three (3) credits, three (3) contact hours per week. This course is designed for students who score 451-480 on the English sub-test of the CEEB that have the permission of the English Department Chairperson or have completed English 0060. It is designed to meet the students' immediate needs and to give them a command of English for professional and cultural growth. Skills in reading and writing are reinforced. The skills developed in class will be reinforced orally in the language lab. It is recommended that students who scored less than 450 on the English sub-test of the CEEB take English 0060.

INGL 3102: BASIC ENGLISH II, three (3) credits, three (3) contact hours per week. Pre-requisite: INGL 3101. This is the continuation of **INGL 3101**. This course can be taught in both traditional and distance learning educational modalities.

INGL 3103: INTERMEDIATE ENGLISH I, three (3) credits, three (3) contact hours per week. This course is designed for students who score 581-690 on the English sub-test of the CEEB and who have the permission of the English Department chairperson. Oral and written communication are stressed as well as the reading and analysis of essays and short stories.

INGL 3104: INTERMEDIATE ENGLISH II, three (3) credits, three (3) contact hours per week. Pre-requisite: INGL 3103. This is the continuation of **INGL 3103** with emphasis on the analysis of the short story and poetry. The practice of research techniques is introduced. This course can be taught in both traditional and distance learning educational modalities.

INGL 3113: ORAL PRACTICE FOR BASIC ENGLISH I, zero (0) credits, one (1) contact hour per week. Laboratory for **INGL 3101**.

INGL 3114: ORAL PRACTICE FOR BASIC ENGLISH II, zero (0) credits, one (1) contact hour per week. Laboratory for **INGL 3102**.

INGL 3117: CONVERSATIONAL ENGLISH FOR STUDY AND TRAVEL, three (3) credits, three (3) contact hours per week. Designed for student who will be traveling to and studying in English-speaking country. Students will engage in communicative activities such as role-playing, dialogues, speeches, oral reports and essays, interviews, simulations, etc. The environment will serve as a living laboratory where students will apply the skills learned in spontaneous situations at shopping malls, restaurants, offices on campus, transportation systems, amusement parks, museums, theaters, sports events and activities, etc. Emphasis on pronunciation, vocabulary development, and problem-solving techniques that are needed to communicate effectively in English.

INGL 3201: GRAMMAR, COMPOSITION AND READING I, three (3) credits, three (3) contact hours per week. Pre-requisite: INGL 3102. Practice in writing composition and creating oral reports upon selected readings including essays, short stories, poems, dramas and novels. Attention will be given as needed to grammar and idiomatic expressions.

INGL 3202: GRAMMAR, COMPOSITION AND READING II, three (3) credits, three (3) contact hours per week. Pre-requisite: INGL 3201. Continuation of **INGL 3201**, with an introduction to research techniques leading to a research paper.

INGL 3221: INTRODUCTION TO LITERATURE I, three (3) credits, three (3) contact hours per week. Pre-requisites: INGL 3102, INGL 3104. Analysis and appreciation of the short story and essay. Oral and written practice of developed themes, taking into consideration the literary genres mentioned. This course can be taught in both traditional and distance learning educational modalities.

INGL 3222: INTRODUCTION TO LITERATURE II, three (3) credits, three (3) contact hours per week. Pre-requisite: INGL 3221. Continuation of **INGL 3221**. Analysis and appreciation of poetry, drama and the novel. This course can be taught in both traditional and distance learning educational modalities.

INGL 3230: RADICAL WOMEN'S WRITING IN THE 20TH AND 21ST CENTURIES, three (3) credits, three (3) contact hours per week. The word *radical* according to Merriam Webster relates to “favoring extreme changes in existing views, habits, conditions, or institutions.” Given the contemporary rash of disinformation regarding gender and women’s issues, we will contemplate the use of the term to explore prominent women’s literature/feminist narratives in English through 20th and 21st century writers. Through the prismatic lens of various voices, we will explore the genres of poetry, personal narrative, short fiction and drama. These narratives will be paralleled against historical references, psychoanalytical approaches, critical texts and other frameworks in order to think critically, discuss and respond to the question of power in women’s voices, minds and bodies.

INGL 3238: INTRODUCTION TO CREATIVE WRITING, three (3) credits, three (3) contact hours per week. Theory and practice of the creation of fiction, poetry and drama. Detailed in-class criticism of student papers by instructor and fellow classmates. This course can be taught in both traditional and distance learning educational modalities.

INGL 3375: GAY AND LESBIAN NARRATIVES, three (3) credits, three (3) contact hours per week. This course is an introduction to narratives written by and about gay, lesbian, bisexual, and transgender (GLBT) persons. In discussing these texts, we will explore the representation of sexuality in language, the development of GLBT and queer politics, and the intersection of political, literary and rhetorical goals. This course can be taught in both traditional and distance learning educational modalities.

EDPE

EDPE 3018: THE TEACHING OF ENGLISH AS A SECOND LANGUAGE AT THE ELEMENTARY SCHOOL LEVEL, three (3) credits, three (3) contact hours per week. Pre-requisite: Any first course or its equivalents. This course is devoted to the analysis and discussion of the nature of the English language as it is spoken in the United States. Emphasis is placed on researching and teaching different ESL methodologies, strategies, and theories. Issues surrounding the teaching of English in Puerto Rico are discussed. The instructional materials that are used in the public elementary schools of Puerto Rico are examined. Project based activities, quasi-demonstration classes, and classroom observations are required.

LITE

LITE 3011: MODERN LITERATURE, three (3) credits, three (3) contact hours per week. An overview of the world literature that best represents the humanism, baroque and neo-classical periods. The literary genre and changes in traditional literature are emphasized. This course can be taught in both traditional and distance learning educational modalities.

LITE 3012: CONTEMPORARY LITERATURE, three (3) credits, three (3) contact hours per week. Pre-requisite: LITE 3011. An overview of the world literature that best represents the romantic, realist and surrealist periods. The literary genre and changes in traditional literature are emphasized. This course can be taught in both traditional and distance learning educational modalities.

INCO

INCO 3005: BUSINESS COMMUNICATION I, three (3) credits, three (3) contact hours per week. Prerequisites: Basic English or its equivalent. This course is designed to provide the student with the background and training for communicating in written form facts and ideas effectively. Special attention is given to correct English usage in business writing and understanding of the principles governing all communication. Emphasis on handling problem situations through business letters and memorandums, which will influence human behavior and get the desired results, are practiced. This course can be taught in both traditional and distance learning educational modalities.

INCO 3025: CONVERSATIONAL ENGLISH FOR SECRETARIES I, one (1) credit, two (2) contact hours per week. Prerequisites: INGL 3101 – 3102 or equivalent. This course is designed for students who are working towards completing an Associate Degree in the Information Technology Management and Administrative Processes. This course emphasizes the acquisition of vocabulary with practice in situations relevant to the office as a workplace.

INCO 4008: STRATEGIC BUSINESS COMMUNICATION. Two (2) credits, three (3) contact hours per week and one (1) hour of lab. Application of strategic business communication applied to oral and written message development in English and document design. This course can be taught in both traditional and distance learning educational modalities.

INCO 4006: REPORT WRITING, two (2) credits, three (3) contact hours per week. Prerequisites: Business English 3005-3006. Report Writing (INCO 4006) provides training in fundamental techniques of Business Communication. Throughout the course, students will produce samples of dynamic and effective writing concerning business situations and problems. Special emphasis is given to the procedures concerning report writing, as well as the organization, objectivity, and will practice research techniques for the collection of primary and secondary data. This course can be taught in both traditional and distance learning educational modalities.

INCO 4035: BUSINESS TRANSLATION. Two (2) credits, two (2) contact hours per week. Prerequisites: INCO 3005-3006. This course is designed to develop student's practical skills in the techniques employed in English/Spanish and Spanish/English translation. Focus is on building vocabulary, using idiomatic expressions, and to the structure of both languages as may apply to business. Special emphasis is given to the style and tone of the business letter.

INCO 4055: CONVERSATIONAL ENGLISH FOR SECRETARIES II . One (1) credits, two (2) contact hours per week. Prerequisites: INCO 3025. This course is designed for students in the Information Technology Management and Administrative Processes. It aims to develop students' listening and speaking skills. Special attention is given to the acquisition of vocabulary and idiomatic expressions related to the field. It also emphasizes the particular patterns of stress and intonation of English grammar.

HUMANITIES DEPARTMENT

FACULTY

Alberty Monroig, José F., Ph.D., *Associate Professor*, Doctor of Philosophy, History of Puerto Rico and the Caribbean, Universidad de Puerto Rico.

Colón Fuentes, José R., Ph.D., *Associate Professor*, Doctor of Latin American Literature, Wisconsin Madison University.

Delgado Rodríguez, Wanda I., Ph.D., *Professor*, Doctor of Philosophy, Puerto Rican and Caribbean Literature, Centro de Estudios Avanzados de Puerto Rico y el Caribe. Postgraduate Degree in Comparative Literature & Digital Literature - Universitat de Barcelona / IL3 Instituto de Formación Continua, Spain. Certification on Applied Linguistic to the Teaching of Spanish as Native Language.

Flores Collazo, María M., Ph.D., *Associate Professor*, Doctor of Philosophy and Letters, History, Universidad de Puerto Rico, Recinto de Río Piedras, Posdoctorate in Cultural Policies, Universidad Autónoma Metropolitana, Iztapalapa, México, D.F.

González Pérez, Luis A., M.A., *Professor*, Master of Arts, Philosophy, Universidad de Puerto Rico; Doctoral Candidate in Philosophy, Universidad de Valladolid, España.

González Sierra, Elvin, Ph.D., *Professor*, Art and History of Art, Universidad de Córdoba, España.

González Soto, Joamel, MM.Ed., *Instructor*, Master in Music in Music Education, Conservatorio de Puerto Rico.

Medina Carrillo, Fernando A., M.A., *Assistant Professor*, Master of Arts, History, Universidad de Puerto Rico.

LIST OF COURSES

ART

ARTE 3115: ART APPRECIATION, two (2) credits, two (2) lecture hours per week. Develops the necessary criteria to understand the general principles of art. Color as a source of aesthetic (artistic) pleasure. Art in the home and the community. Presentation of art collections from famous museums. Guided tours to museums and exhibitions, and workshops.

ARTE 3116: HISTORY OF ART (COMPENDIUM), three (3) credits, three (3) lecture hours per week. The art process seen within the total historical context, emphasizing the understanding of contemporary art. A chronological order is followed in order to facilitate the study of such a large compendium.

ARTE 3118: PUERTO RICAN ART, three (3) credits, three (3) lecture hours per week. The study of the plastic arts since Pre-Columbian times to the present, considering the artistic expressions in architecture, sculpture, painting, graphic arts, movies, photography and popular arts.

ARTE 3125: DRAWING I: three (3) credits, three (3) lecture hours per week. Elements of drawing and composition using still-life of the human figure as a starting point.

ARTE 3135: BASIC PAINTING, three (3) credits, four (4) contact hours per week. Introduction to the basic elements of painting and the principles of composition using oleo and acrylics. Free styles and themes.

ARTE 3816: PROCESS OF PAINTING I: MATERIALS AND TECHNIQUES OF EASEL PAINTING, three (3) credits, four and a half hours per week in the atelier. Pre-requisites: ARTE 3815 or ARTE 3135. An intermediate course, which explores the technical possibilities and the materials proper to easel painting.

ESIN

ESIN 4001: SEMINAR OF PUERTO RICAN STUDIES, three (3) credits, three (3) lecture hours per week. Study the development of Puerto Rican culture. It gives special attention to the artistic, philosophical and literary thought, from the second half of the 19th century to the 20th century. It is a research course.

FILO

FILO 3001: INTRODUCTION TO PHILOSOPHY I, three (3) credits, three (3) contact hours per week. Study and analysis of the most important philosophical problems throughout the course of its historical development. Problems in epistemology, metaphysics, ethics and philosophical anthropology are emphasized. Special attention is given to the classical Greek period and the beginning of philosophical thought in the Middle Ages.

FILO 3002: INTRODUCTION TO PHILOSOPHY II, three (3) credits, three (3) contact hours per week. Study and analysis of the most important problems in philosophy from the Renaissance on. Special attention is given to modern philosophical thoughts. Rationalism, empiricism, idealism. The relationship between modern philosophy and natural science is emphasized.

FILO 3005: ETHICS, three (3) credits, three (3) lecture hours per week. Introduction to the criteria and principles on which human behavior and the criteria for differentiating ethics from moral experiences are founded. Based on this analysis, different ethical theories which have appeared throughout history will be discussed.

FILO 4006: LOGIC I, three (3) credits, three (3) lecture hours per week. A study of the principles and methods of reasoning in classical and modern logic. The term, categorical propositions and categorical syllogisms; propositional calculus or corrective logic and the quantification theory or operational logic.

FILO 4027: BIOETHICS, three (3) credits, three (3) lecture hours per week. Moral problems related to biological research and technology.

FRAN

FRAN 3191: BASIC FRENCH I, four (4) credits, three (3) lecture hours per week, one (1) hour laboratory. With the desire to accomplish the learning of this language at an adult level, an accelerated course, based on basic or fundamental French, has been designed. It does not exceed that which can be assimilated in a year's work. The main interest is to familiarize the student with the grammar indispensable to understand and make him/herself understood in French, whether orally or in writing.

FRAN 3192: BASIC FRENCH II, four (4) credits, three (3) lecture hours per week, one (1) hour laboratory. Pre-requisite: FRAN 3191. Continuation of the previous course.

FRAN 3193: FRENCH I LABORATORY, zero (0) credits, one (1) hour per week. Co-requisite: FRAN 3191. Laboratory for the Basic French I course.

FRAN 3194: FRENCH II LABORATORY, zero (0) credits, one (1) hour per week. Co-requisite: FRAN 3192. Laboratory for the Basic French II course.

HIST

HIST 3111: HISTORY OF THE UNITED STATES FROM THE COLONIAL PERIOD TO THE CIVIL WAR, three (3) credits, three (3) lecture hours per week. The history of the United States of America from the colonial period to the Civil War. The social, political and cultural development will be studied for the purpose of understanding the American Revolution, the founding of the Republic, its rapid growth in the 19th Century, and the events which culminated in the Civil War of 1861.

HIST 3112: HISTORY OF THE UNITED STATES AFTER THE CIVIL WAR TO THE PRESENT, three (3) credits, three (3) lecture hours per week. History of the United States after the Civil War to the present.

HIST 3165: HISTORY OF THE RENAISSANCE, three (3) credits, three (3) lecture hours per week. A study of the Renaissance as the threshold to modern civilization in its social, political, economic and cultural aspects; the religious crisis that arises in the 16th century until the Westphalia Peace Treaty, and from there on the manifestation of the two great trends of modern civilization; the absolutist monarchy exemplified in France and the English model; the parliamentary system; and the intellectual European revolution until the 18th century.

HIST 3177: SOCIAL AND CULTURAL HISTORY OF PUERTO RICO, three (3) credits, three (3) lecture hours per week. A study of the Puerto Rican social and cultural history from colonial times to the present. The historical journey will be studied with the purpose of understanding the idiosyncrasy and culture of Puerto Ricans and the transformations in all spheres from their social and national lives.

HIST 3179: SOCIAL AND CULTURAL HISTORY OF THE UNITED STATES, three (3) credits, three (3) lecture hours per week. Study of the History of the United States of America from colonial times to the present. The social and cultural development will be studied with the purpose of understanding the processes which defined the idiosyncrasy and culture of their social and national lives.

HIST 3241: HISTORY OF PUERTO RICO I, three (3) credits, three (3) lecture hours per week. Basic elements of geography and geology of Puerto Rico, indigenous culture, discovery, conquest, colonization, institution, European attacks, economy, contraband, chroniclers, liberalism and absolutism.

HIST 3242: HISTORY OF PUERTO RICO II, three (3) credits, three (3) lecture hours per week. Governors, the Grito de Lares, slavery and abolitionism, journeyman notebooks, education, literature, journalism, political parties, the Depression, Operation Bootstraps, urbanism, and emigration.

HUMA

HUMA 3010: SUMMER IN EUROPE, six (6) credits. A trip to Europe is a practical and direct experience thru which a student can appreciate culture, geography, social organization and idiosyncrasy of the countries visited. This personal experience, together with the theory provided in the classroom, is of unquestionable value to the student in completing his or her intellectual formation. The offering is structured so that students receive a theoretical component before the trip which consists of mini-courses in foreign languages, at their functional level, evaluation of cultural videos, distribution and assessment of didactical materials. A practical component, the trip itself and the visits to museums, galleries, monuments and the final evaluations after returning back to school is also included.

HUMA 3101: WESTERN CULTURE I, three (3) credits, three (3) contact hours per week. A study of the most representative aspects of western culture, taking into consideration its Greek origins. The study is carried out by means of the critical analysis of literary, philosophical, artistic and religious classical works. This course can be taught in both traditional and distance learning educational modalities.

HUMA 3102: WESTERN CULTURE II, three (3) credits, three (3) contact hours per week. A study of the most representative aspects of western culture, taking into consideration its Roman and medieval origins. The study is carried out by means of the critical analysis of literary, philosophical, artistic and religious classical works.

HUMA 3201: WESTERN CULTURE III, three (3) credits, three (3) contact hours per week. The study of the development of the modern world, from the Renaissance period to the French Revolution. A critique of the ideas and problems raised by classical works representative of each period.

HUMA 3202: WESTERN CULTURE IV, three (3) credits, three (3) contact hours per week. The study of modern man from the French Revolution to modern times. A critique of the ideas and problems raised by classical works representative of each period.

HUMA 3145: SEMINAR WEB 2.0 TOOLS RESEARCH PROCESS IN THE HUMANITIES, three (3) credits, three (3) contact hours per week. Research process and its elements. Exploration of the Web 2.0 available and its uses as part of a research process. Design and development of a research proposal for the Humanities.

INTD

INTD 3046: FEMINIST WRITINGS, three (3) credits, three (3) contact hours per week. In the course, Feminist Writings, a body of literary works (writings) by women, stemming from theories derived from feminist writings (works), is analyzed. The debates over the influence of the genre on writing from a historic, semiotic and literary perspective is studied. Literary genres traditionally associated with feminist writings, such as the diary, autobiography, and testimony, will also be explored.

LITE

LITE 3011: MODERN LITERATURE, three (3) credits, three (3) contact hours per week. An overview of the world literature that best represents the humanism, baroque and neo-classical periods. The literary genre and changes in traditional literature are emphasized.

LITE 3012: CONTEMPORARY LITERATURE, three (3) credits, three (3) contact hours per week. An overview of the world literature that best represents the romantic, realist and surrealist periods. The literary genre and changes in traditional literature are emphasized.

LITE 3035: MYTHOLOGY IN WESTERN LITERATURE, three (3) credits, three (3) contact hours per week. Study of fundamental mythological themes of Greek, Roman, German and Celtic cultures, and its manifestations in Western literature. This course can be taught in both traditional and distance learning educational modalities.

LITE 4055: DIGITAL LITERATURE, three (3) credits, three (3) contact hours per week. Study of the digital as a manifestation of digital electronic textualities in and for the cyberspace. This course can be taught in both traditional and distance learning educational modalities.

LITE 4176: TRANSMEDIA STORYTELLING: EPIC, MYTHS, FOLKTALES, COMICS, FILMS AND VIDEOGAMES, three (3) credits, three (3) contact hours per week. A study of the epic, myth, fairytales, comic books, film and videogames as manifestations of the interdisciplinary discourse between hypermedia and transmedia narratives. This course can be taught in both traditional and distance learning educational modalities.

MUSI

MUSI 3175: THEORY AND DICTATION I, three (3) credits, three (3) contact hours per week. Introductory course that studies the fundamentals of music theory of reading and intonation of dictation.

MUSI 3176: THEORY AND DICTATION II, three (3) credits, three (3) contact hours per week. Pre-requisite: MUSI 3175. A continuation of MUSI 3175.

MUSI 3210: HANDBELL ENSEMBLE, three (3) credits, three (3) contact hours per week. Pre-requisite: MUSI 3175. The handbell ensemble is a small musical group specialized on the study of technique, musical literature and performance of English handbells and handchimes instruments.

MUSI 3225: THE HISTORY OF MUSIC, three (3) credits, three (3) contact hours per week. The course offers a panoramic view of the musical development in the West from Greek and Roman times to the present. Emphasis is placed on works of the great composers. These are studied as part of the historical period in which they were created.

MUSI 3235: MUSIC APPRECIATION, two (2) credits, two (2) contact hours per week. This course offers students the opportunity to get know classical music and appreciate its aesthetic

value. The different musical forms are studied: symphony, fugue, sonata, oratorio and the opera. Students are taught how to distinguish between classical and folkloric music.

MUSI 3185: HANDBELLS ENSEMBLE METHODOLOGY, three (3) credits, three (3) contact hours per week. Pre-requisite: MUSI 3175. Teaching proper handling techniques for mastering the handbells. Furthermore, it considers the study of concepts, musical notations and symbolism for the performance of repertoire.

MUSI 4037: VOCAL TECHNIQUES, three (3) credits, three (3) contact hours per week. Pre-requisite: MUSI 3175. Basic operation and use of the vocal mechanism for its own in singing. Also considered is the study of the elements of artistic vocal production, proper use of the physical apparatus and techniques for interpreting the repertoire.

MUSI 4401: CHORAL CONDUCTING I, three (3) credits, three (3) contact hours per week. Pre-requisites: MUSI 3175 & MUSI 3176. Introduction to basic conducting skills with an emphasis on art and the study of choral conducting, correct use of the baton, technical and independence of hands, nonverbal communication, leadership, terminology, analysis and reading scores.

MUSI 4406: CHORAL LITERATURE, three (3) credits, three (3) contact hours per week. Pre-requisite: MUSI 4401. Study of the academic and contemporary choral literature in a practical context for programming concerts with emphasis on the forms, genres and composers suitable for a variety of choral groups and types of action. Implementation of search sources choral music and research and analysis skills for managing music for ensembles.

TEAT

TEAT 3011: STAGE ACTING I, two (2) credits, three (3) contact hours per week. The fundamental techniques of stage acting. Includes one hour of lecture and two of laboratory.

TEAT 3012: STAGE ACTING II, two (2) credits, three (3) contact hours per week. Pre-requisite: The fundamental techniques of stage acting. Includes one hour of lecture and two of laboratory.

TEAT 3025: APPRECIATION OF THE DRAMATIC ARTS, three (3) credits, three (3) contact hours per week. Analysis of the different elements that contribute to the realization of a theater production, a short history of the theater and representation of dramatic pieces. Workshop is optional.

TEAT 3030: DICTION, three (3) credits, three (3) contact hours per week. Fundamental aspects of the theory and techniques of theatrical diction.

TEAT 3161: PANTOMIME I, three (3) credits, three (3) contact hours per week. Disciplined preparation of the intellect the imagination and the body of aspiring pantomimes to improvise on stage or in mimed dramas. Students will learn to appreciate the various tradition of this ancient art form while practicing it or while acquiring skills through practice.

TEAT 3191: INTRODUCTION TO THEATRICAL PRODUCTION I, three (3) credits, two (2) lecture hours and three (3) practice hours, a total of five (5) hours per week. The theory and practice of theatrical production. Study of the script, research on the historical time, development of the concept of production, wardrobe and make-up design, scenery, props, lighting, sound effects and publicity campaign.

TEAT 3192: INTRODUCTION TO THEATRICAL PRODUCTION II, three (3) credits, two (2) lecture hours and three (3) practice hours, a total of five (5) hours per week. A continuation of **TEAT 3191.**

TEAT 3192: INTRODUCTION TO THEATRICAL PRODUCTION II, three (3) credits, two (2) lecture hours and three (3) practice hours, a total of five (5) hours per week. A continuation of **TEAT 3191.**

MATHEMATICS DEPARTMENT

FACULTY

Alvarado Torres, René, M.S., *Professor*, Master of Science, Applied Mathematics, Universidad de Puerto Rico, Recinto de Río Piedras.

Berra Pérez, Julio, M.S., *Professor*, Master of Science, Applied Mathematics, Universidad de Puerto Rico, Recinto de Río Piedras.

Candelaria Soberal, José F., Ph.D., *Professor* Doctorate in Mathematics, University of Iowa.

Humarán Martínez, Yuitza T., Ed.D., *Professor*, Doctorate in Education Curriculum and Education in Mathematics, Universidad de Puerto Rico, Recinto de Río Piedras

Leonardo Suárez, Luisa, M.S., *Professor*, Master of Science, Applied Mathematics, Universidad de Puerto Rico, Recinto de Mayagüez.

Rivera, Manuel, M.S., *Professor*, Master of Science, Applied Mathematics, Universidad de Puerto Rico, Recinto de Río Piedras.

Sánchez Zambrana, Anneliese, M.S., *Professor*, Master of Science, Applied Mathematics, Universidad de Puerto Rico, Recinto de Río Piedras.

Santiago Labrador, Glorymill, M.S., *Professor*, Master of Science, Pure Mathematics, Universidad de Puerto Rico, Recinto de Río Piedras.

LIST OF COURSES

MATE 0008: DEVELOPMENT OF BASIC MATHEMATICAL SKILLS, no credits, three (3) contact hours per week. This course focuses on mathematical topics such as number sets, basic algebraic expressions, polynomials, factorization, basic mathematical operations with rational expressions, radicals, systems of equations with two linear equations and their applications.

MATE 1031: TECHNICAL MATHEMATICS FUNDAMENTALS I, four (4) credits, four (4) contact hours per week. In this course, concepts and mathematics skills are developed for the differential and integral calculus. The student will be exposed to diverse activities in order to improve their quantitative reasoning and their ability to use the mathematical language and symbolism. They will study the real number set, polynomials, rational expressions of polynomials, linear equations, and quadratic equations, systems of linear equations, basic function theory, exponential functions, and logarithmic functions. Emphasis on the use of technology (graphic calculator, computers, for example) and/or mathematical programs to make computations, evaluate functions, approximate solutions for equations and analyze mathematical concepts from the graphical point of view.

MATE 1032: TECHNICAL MATHEMATICS FUNDAMENTALS II, four (4) credits, four (4) contact hours per week. Pre-requisite: MATE 1031. In this course, the technology students work notions on geometry, trigonometric functions, differential and integral calculus in one variable with some applications. Most of the course covers fundamental concepts of differential and integral calculus as in the first course of the sequence, strong emphasis is given in the use of technology and/or mathematics programs to make computations, evaluate functions, approximate solutions for equations and particular to explore and analyze mathematical concepts from the graphical point of view. With the use of technology in the learning-teaching process, it is sought to complement concepts presented in the course.

MATE 3001: INTRODUCTORY MATHEMATICS I, three (3) credits, three (3) contact hours per week. Basic notions of the set theory and logic. Polynomials and rational expressions. Elementary functions and their graphs. Equations and inequalities. Systems of linear equations and their applications. The quadratic equations.

MATE 3002: INTRODUCTORY MATHEMATICS II, three (3) credits, three (3) contact hours per week. Pre-requisite: MATE 3001 or MATE 3171. It includes relations and functions, linear, quadratic and rational functions; exponential functions and logarithms; trigonometric functions and their inverses and vectors.

MATE 3004: ALGEBRA, three (3) credits, three (3) contact hours per week. Basic operations with algebraic expressions and polynomials, factoring, basic operations with algebraic functions, systems of linear equations in two variables, roots, application problems.

MATE 3015: ELEMENTAL STATISTICS, three (3) credits, three (3) contact hours per week. Pre-requisite: MATE 3001 or MATE 3035 or MATE 3131. Includes topics such as: frequency distribution, graphs, descriptive analysis of a sample, probability, mathematical expectations, binomial distribution, and normal distribution, predictions and simple correlations.

MATE 3026: INTRODUCTION TO STATISTICS WITH COMPUTERS, three (3) credits, four (4) contact hours per week. Pre-requisite MATE 3171. Elementary combinatorics. Probability theory. Introduction to descriptive statistics. Random variables. Discrete and continuous sampling. Estimation. Hypothesis testing. Correlation and regression. Basic concepts of scientific programming. Computerized systems for statistics. The use of the computer in random experiments. The student will complete programming projects in which the concepts studied are used.

MATE 3031: CALCULUS I, four (4) credits, four (4) contact hours per week. Pre-requisite: MATE 3172. Includes continuity, rules for differentiation high-order derivatives; implicit differentiation, maxima and minima problems, rate of change, curve sketching and concavity, definite integrals, derivative and integrals of transcendental functions and applications.

MATE 3032: CALCULUS II, four (4) credits, four (4) contact hours per week. Pre-requisite: MATE 3031. Includes topics such as: integration techniques, polar coordinates, parametric equations, indeterminate forms, improper integrals, vectors and vector functions, series and their applications.

MATE 3035: HEALTH RELATED MATHEMATICS: three (3) credits, three (3) lecture hours per week. Notions about sets, development of real number systems starting from natural numbers; fractions; simple linear equations; decimal system; percentage; ratios and proportions; the metric, English, apothecary and home systems; applications for preparing solutions and medications; graphs and basic statistics.

MATE 3063: CALCULUS III, three (3) credits, three (3) contact hours per week. Pre-requisite: MATE 3032 or MATE 3062. Differential and integral calculus with several variables; partial derivative, vector fields and, an introduction to differential equations with applications.

MATE 3131: FUNDAMENTALS CONCEPTS ARITHMETIC AND ALGEBRA FOR ELEMENTARY SCHOOL TEACHERS, three (3) credits, three (3) contact hours per week. Algebraic properties of integer and rational numbers. Natural and rational numbers. Ordering numbers. Solving simple equations and inequalities. Measurement and approximation. Divisibility rules. Greatest common divisor and least common multiple. Percent, ratios and proportions. Word Problems. Charts. Correspondences. The real numbers.

MATE 3132: FUNDAMENTALS CONCEPTS OF GEOMETRY, PROBABILITY AND STATISTICS FOR ELEMENTARY SCHOOL TEACHERS, three (3) credits, three (3) contact hours per week. Pre-requisite: MATE 3131. Euclidean plane geometry: axioms and primitive concepts, simple tests on geometry, elementary properties of triangles, quadrilaterals and circles; geometrical constructions, using compass and ruler constructions, the Cartesian coordinate system, angle and area measurements. Solid Geometry: elementary properties of pyramids, prisms, cylinders measurements, cones and spheres, volume measurements, applications. Statistics: exploratory data analysis, grouped data and ungrouped, central tendency measurements and variation, probability, independent and mutually exclusive events; normal distribution and applications.

MATE 3171: PRE-CALCULUS I, three (3) credits, three (3) contact hours per week. Pre-requisite: MATE 0008 or a score of 595 higher on the Mathematics Achievement section of the CEEB exam or a score 4 or 5 on the Advanced Placement Test for Mathematics (Precalculus). Properties of the real number system; Exponents and radicals; inequalities; absolute value; algebraic exponential, logarithmic and trigonometric functions and their graphs. Systems of two linear equations with two unknowns, and systems of three linear equations with three unknowns.

MATE 3172: PRE-CALCULUS II, three (3) credits, three (3) contact hours per week. Pre-requisite: MATE 3171. Includes: Exponential and logarithmic functions; trigonometric functions and their inverses; mathematical induction; arithmetic and geometric progressions and series; and vectors.

MATE 4055: UNDERGRADUATE RESEARCH, two (2) credits, three (3) contact hours per week. Pre-requisite: Requires the consent of the course instructor or program coordinator. The course consists of a research topic assigned by the professors in the fields of mathematics or computers science. Usually, the research topic will be part of a larger project and the student's work will be evaluated according to the quantity and originality of their contribution.

MECU 3031: QUANTITATIVE METHODS FOR BUSINESS ADMINISTRATION I, three (3) credits, four (4) contact hours per week. Pre-requisite: MATE 0008 or a score of 595 higher on the Mathematics Achievement section of the CEEB exam or a score 4 or 5 on the Advanced Placement Test for Mathematics (Precalculus). A pre-calculus course for the study of functions and graphs, in particular linear, quadratic, rational, irrational, piece-wise, exponential and logarithmic functions. Matrix algebra and the solution of systems of linear equations by the reduction method. Emphasis on the use of these concepts in the solution of business applications such as: linear tendency, linear depreciation, rate of change, optimization (revenue, cost) and mathematics of finance.

MECU 3032: QUANTITATIVE METHODS FOR BUSINESS ADMINISTRATION I, three (3) credits, three (3) contact hours per week. Pre-requisite: MECU 3031. An introductory one variable differential calculus course for student of business administration. Limits, continuity and the derivate of a function. Rules of differentiation. Curse sketching. Emphasis in the business applications of continuous interest, marginal analysis and optimization of functions. Brief introduction to integral calculus.

SPANISH DEPARTMENT

FACULTY

Altieri Sotomayor, Yeidi, Ph. D., *Professor, Puerto Rican and Caribbean Literature*, Centro de Estudios Avanzados de Puerto Rico y el Caribe

Domenech Flores, Emma, M. A., *Professor, Spanish-American Literature, Queens College, City University of New York (CUNY)*.

Franqui Rosario, Rebeca, Ph. D., *Professor, Puerto Rican and Caribbean Literature, Cornell University*.

González Muñiz, Rosa del C., Ph. D., *Professor, Linguistics, Universidad de Puerto Rico, Río Piedras*.

Jiménez Rivera, Evelyn, J.D. Ph. D., *Professor, Puerto Rican Literature, University of Massachusetts. Juris Doctor, Universidad de Puerto Rico, Río Piedras*.

Juarbe Bonilla, Lizzette, Ph. D., *Associate Professor, Puerto Rican and Caribbean Literatures, Centro de Estudios Avanzados de Puerto Rico y el Caribe*.

Mejías López, William, Ph. D, *Professor, Colonial Literature, University of California, Berkeley*.

Ortiz Maldonado, Eduardo, Ph. D., *Professor, Spanish Literature, Emory University*.

Pérez Torres, Yazmín, Ph. D, *Professor, Puerto Rican Literature, University of Wisconsin at Madison*.

Ríos Soto, Marilyn, Ph. D., *Professor, Latin American Literature, University of Connecticut*.

Rivera Hernández, José J., M. A., *Professor, Hispanic Studies, Universidad de Puerto Rico, Río Piedras*.

LIST OF COURSES

ESCO

ESCO 3001: THE PSYCHOLOGY OF COMMUNICATION I, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3102. The study of writing and writing styles. The psychology and language of business. Oral and written communication techniques; advertisement. The course presents a broad view of the business world.

ESCO 3002: THE PSYCHOLOGY OF COMMUNICATION II, three (3) credits, three (3) contact hours per week. Pre-requisite: ESCO 3001. The business letter and its importance in the business world. Practice in writing different types of business letters. Techniques, ethics, style and editing are studied in order to achieve effective written communication.

ESPA

ESPA 0060: DEVELOPMENTAL SPANISH, three (3) credits, three (3) lecture hours per week. Designed for students who do not have the skills to do effective work in the Basic Spanish course. The course aims to improve student's skills through grammar exercises and the development of composition skills so as to prepare them to compete on an equal basis with students in the Basic Spanish course. This course can be taught in both traditional and distance learning modalities.

ESPA 3007: ORAL COMMUNICATION, three (3) credits, three (3) lecture hours per week. Pre-requisite: ESPA 3102. This course combines communication and language theory with practice and exercises about oral language principles. It recognizes particular language characteristics and it discusses mistakes that should be avoided. It pays special attention to the structure of oral language in media. It is mainly a workshop in which communications students are exposed to the language as a vitally important tool for Information broadcast. Through this course, students will improve diction, projection and voice modulation skills, as they will learn how to use language in a planned and strategic way. This course can be taught in both traditional and distance learning modalities.

ESPA 3101: BASIC SPANISH I, three (3) credits, three (3) contact hours per week. An introduction to the study of the historical and grammatical aspects of the Spanish language. A view of the literary creations in Spanish. Basic themes in the short story and the novel. This course can be taught in both traditional and distance learning modalities.

ESPA 3102: BASIC SPANISH II, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3101. A continuation of the study of the grammatical aspects of the language. A division of contemporary Spanish literature by studying the basic themes in the essay, drama and poetry. This course can be taught in both traditional and distance learning modalities.

ESPA 3111: HONOR SPANISH I, three credit hours, three hours of lecture per week.

Offered to students who have a superior preparation in the literary linguistic aspect. It follows the lines of a basic course, but in an advanced and intense manner. The student will handle the research and writing techniques of essays.

ESPA 3112: HONOR SPANISH II, three credit hours, three hours of lecture per week. Continuation of ESPA 3111.

ESPA 3208: COMPOSITION, three credit hours, three hours of lecture per week. Pre-requisite: ESPA 3102. Theory of grammar applied to the written language; comparison among languages of diverse literary genres; elements of semantic and stylistics. This course can be taught in both traditional and distance learning modalities.

ESPA 3211: INTRODUCTION TO SPANISH LITERATURE I, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3102. A study of literary styles, authors and works representative of Spanish literature from its medieval origins to the Renaissance. This course can be taught in both traditional and distance learning modalities.

ESPA 3212: INTRODUCTION TO SPANISH LITERATURE II, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3211. A study of literary styles authors and works representative of Spanish literature from the Golden Age to the present. This course can be taught in both traditional and distance learning modalities.

ESPA 3215: BUSINESS EXPRESSION AND COMMUNICATION, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3102. Development of skills for efficient language use, both oral and written. Special attention will be given to written communication forms: letters, memoranda, summaries, reports, etc. The principles of logic and psychology basic to the efficient writing of these forms will be presented and intense practice in their preparation will be given. This course can be taught in both traditional and distance learning modalities.

ESPA 3287: THE PRESENCE OF WOMEN IN PUERTO RICAN LITERATURE, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3102. This elective course chronologically examines a representative sample of the participation of women through the literary history of Puerto Rico from the century XIX to the present. It is intended that the student can examine the relationship between historical and social processes and characteristics of women's literature from the perspective of many texts, and proximity to the literary canon. Lectures, discussion and research.

ESPA 3291: SPANISH GRAMMAR I, three (3) credits, three (3) lecture hours per week. Prerequisite: ESPA 3102. The main objective of the course is the theoretical-practical study of Spanish morphosyntax with emphasis on the noun phrase, subject of the sentence. Develops the capacity for analysis through the search for solutions to specific linguistic problems and the practical application of the use, according to the norm, of the oral and written language.

ESPA 3292 SPANISH GRAMMAR II, three (3) credits, three (3) lecture hours per week. Prerequisite: ESPA 3291. The main objective of the course is the theoretical-practical study of Spanish morphosyntax with emphasis on the verb syntagm, the core of the sentence. Develops the capacity for analysis through the search for solutions to specific linguistic problems and the practical application of the use, according to the norm, of the oral and written language.

ESPA 3305: FILM AND HISPANIC LITERATURE, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3102. A comparative analysis of literary and cinematic codes in Hispanic texts and the films based on the. This course can be taught in both traditional and distance learning modalities.

ESPA 4108: SEMINAR APPRECIATION AND POETIC WRITING, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3102. This course is aimed at enhancing knowledge in the poetic genre acquired by students in previous courses. Students will experience the reading, analysis and writing poems without trying to create poets but poetic experiences. Hispanic texts and translations of poems of other languages will be handled.

ESPA 4208: INTEGRATION TO GRADUATE STUDIES SEMINARY, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3102. This course is designed to fulfill the needs of undergraduate students who aspire to continue studies at a graduate level. The objective of the seminar is to reinforce and develop the reading, writing and research skills that are particularly inherent to the graduate studies environment. Once enrolled in the course participants will join a learning community in which they will work as active agents of their academic development as future graduate students. The seminar will provide diverse resources (informative, technological, orientation guidance, research training etc.) destined to strengthen the process of application, transition and professional performance in the graduate school. This course can be taught in both traditional and distance learning modalities.

ESPA 4221: SPANISH-AMERICAN LITERATURE I, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3102. Broad view of Spanish-American literature from the Indian chronicles to the end of post-romanticism.

ESPA 4222: SPANISH-AMERICAN LITERATURE II, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 4221. A broad view of Spanish-American literature from Modernism to the present. The study of the principal authors and their works within the corresponding historical framework.

ESPA 4231: PUERTO RICAN LITERATURE I, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3102. A broad view of Puerto Rican literature from its origins to the avant-garde movement. Reading and analysis of representative works from each period.

ESPA 4232: PUERTO RICAN LITERATURE II, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 4231. A broad view of Puerto Rican literature from the “Generación del treinta” to the present. The study of the major works of the most important authors.

ESPA 4233: CONTEMPORARY PUERTO RICAN LITERATURE, three (3) credits, three (3) contact hours per week. Evaluation and analysis of Puerto Rican literature beginning from writers of the fifties until the present.

ESPA 4267: PUERTO RICAN LITERATURE (COMPENDIUM), three (3) credits, three (3) contact hours per week. Consolidated course of Puerto Rican literature, its development and peculiarities within the Latin American framework. This course can be taught in both traditional and distance learning modalities.

ESPA 4378: CONTEMPORARY CHILDREN AND YOUTH PUERTO RICAN LITERATURE SEMINAR, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3102. Course of research, analysis and reading on the Puerto Rican Children's Literature in the recent fifty years. Contemporary and representative texts of stories, poetry and drama will be discussed. Students will interact with current writers of this literature. This course will be offered in the form of learning community.

LITE

LITE 4276: HEROES AND ANTIHEROES, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3102. Study the causes and effects regarding the development and diffusion of heroic characters; which tales have had universally cultural repercussions. The course will trace the heroes from the modern to the contemporary world.

**NURSING DEPARTMENT
ASSOCIATE DEGREE IN NURSING
(2404)**

The Associate Degree in Nursing is a two-year program that prepares the student to offer direct care services to the patient under the direction and supervision of a general or specialized nursing professional. Graduates from this program can be employed in a variety of health scenarios in Puerto Rico or in the United States. **This program is accredited by the Accreditation Commission for Education in Nursing (ACEN, <http://www.acenursing.org/>).**

MISSION

Our mission is to disseminate nursing knowledge that enables students to provide quality bio-social care to clients in different stages of growth and development, accomplished in part by integrating family and community groups, and by utilizing innovative technological tools area of professional emphasis and distance education. The Department of Nursing aspires to transmit ethical, moral and spiritual values, which will provide students with sensitivity and responsibility to social matters. Finally, the Department of Nursing is committed to stimulating students' critical thinking, analysis and research skills.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ENFE 1007	Laboratory of Fundamental Concepts and Practice of Nursing I	2
PSIC 3005	General Psychology	3
BIOL 3741	Human Anatomy and Physiology I	4
BIOL 3743	Lab. for Human Anatomy and Physiology I	0
MATE 3035	Health Related Mathematics	3
ENFE 1016	Historical and contemporary perspectives of nursing	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
ENFE 1021	Fundamental Concepts and Practice of Nursing II	6
ENFE 1022	Laboratory of Fundamental Concepts and Practice of Nursing II	0
BIOL 3742	Human Anatomy and Physiology II	4
BIOL 3744	Lab. for Human Anatomy and Physiology I I	0
ENFE 1031	Nursing Intervention in Mental Health and Psychiatry	5
ENFE 1032	Lab. for Nursing Intervention in Mental Health and Psychiatry	0
ENFE 1045	Pharmacotherapy and Medical Calculation	3
TOTAL		18

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ENFE 2041	Medical-Surgical Nursing I	6
ENFE 2042	Lab. Medical-Surgical Nursing I	0
BIOL 2001	Elementary Microbiology I	4
BIOL 2002	Lab. Elementary Microbiology I	0
ENFE 2011	Nursing Intervention with Mother and Newborn	5
ENFE 2012	Lab. for Nursing Intervention with Mother and Newborn	0
ESPA 3101	Basic Spanish I	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
ENFE 2043	Medical-Surgical Nursing II	4
ENFE 2044	Lab. for Medical-Surgical Nursing II	2
ENFE 2051	Pediatric Nursing Intervention	3
ENFE 2052	Lab. for Pediatric Nursing Intervention	2
HUMAXXXX	Course in General Education Program	3
INGL 3101	Basic English II	3
INGL 3113	Oral Practice II	0
TOTAL		17
Total credits: 68		

**NURSING DEPARTMENT
ASSOCIATE DEGREE IN NURSING
NEW SEQUENCE CURRICULUM 2019
(2404)**

First Semester		
CODE	DESCRIPTION	CREDITS
ENFE 1021	Fundamental Concepts and Practice of Nursing	4
ENFE 1022	Laboratory of Fundamental Concepts and Practice of Nursing	2
BIOL 3741	Human Anatomy and Physiology I	4
BIOL 3743	Lab. for Human Anatomy and Physiology I	0
MATE 3035	Health Related Mathematics	3
ENFE 1016	Historical and contemporary perspectives of nursing	3
TOTAL		16

Second Semester		
CODE	DESCRIPTION	CREDITS
PSIC 3005	General Psychology	3
BIOL 3742	Human Anatomy and Physiology II	4
BIOL 3744	Lab. for Human Anatomy and Physiology I I	0
ENFE 1031	Nursing Intervention in Mental Health and Psychiatry	5
ENFE 1032	Lab. for Nursing Intervention in Mental Health and Psychiatry	0
ENFE 1045	Pharmacotherapy and Medical Calculation	3
TOTAL		15

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ENFE 2041	Medical-Surgical Nursing I	6
ENFE 2042	Lab. Medical-Surgical Nursing I	0
BIOL 2001	Elementary Microbiology I	4
BIOL 2002	Lab. Elementary Microbiology I	0
ENFE 2011	Nursing Intervention with Mother and Newborn	5
ENFE 2012	Lab. for Nursing Intervention with Mother and Newborn	0
ESPA 3101	Basic Spanish I	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
ENFE 2043	Medical-Surgical Nursing II	4
ENFE 2044	Lab. for Medical-Surgical Nursing II	2
ENFE 2051	Pediatric Nursing Intervention	3
ENFE 2052	Lab. for Pediatric Nursing Intervention	2
<u>HUMAXXXX</u>	Course in General Education Program	3
INGL 3101	Basic English II	3
INGL 3113	Oral Practice II	0
TOTAL		17

CODE	DESCRIPTION	CREDITS
ENFE 2043	Medical-Surgical Nursing II	4
ENFE 2044	Lab. for Medical-Surgical Nursing II	2
ENFE 2051	Pediatric Nursing Intervention	3
ENFE 2052	Lab. for Pediatric Nursing Intervention	2
<u>HUMAXXXX</u>	Course in General Education Program	3
INGL 3101	Basic English II	3
INGL 3113	Oral Practice II	0
TOTAL		17

Total credits: 66

FACULTY

Acevedo Ramos, José, M.S.C., C.N.S., DNP. *Professor*, Master of Nursing Sciences, Clinical Specialist, University of Northeastern; Doctoral in Nursing, Clinical Specialist, Case Western Reserve University, Certificated in Genetic.

Chaparro Irizarry, Glenda, M.S.N., C.N.S., Ph.D.(s), *Instructor*, Master of Nursing Sciences, Neonatal- Pediatric Nursing. Role Education, Caribbean University. Students Doctoral of Philosophy in Education.

Corchado Cruz, Jorge, M.S.N., C.N.S., Ph. D. *Professor*, Master of Sciences Nursing, Medicine and Surgery, Role Education, Critical Care, Pontifical Catholic University of Puerto Rico. Doctor of Philosophy in Nursing, Widener University.

González Cortés, Mayda, M.S.N., C.N.S., *Professor*, Master of Sciences Nursing, Mental Health and Psychology, Rol Administration, Pontifical Catholic University of Puerto Rico.

Hernández Ramírez, Madeline, M.S.N., C.N.S., Ph.D. *Assistant Professor*, Master of Science Nursing, Medicine and Surgery, Role Education, Role Administration, Critical Care, Pontifical Catholic University of Puerto Rico. Doctor of Philosophy in Nursing, UMASS University, Massachusetts.

Jiménez Carrión, Raúl, M.S.N., C.N.S., Psy.D., *Assistant Professor*, Master of Science Nursing, Mental Health and Psychiatry, Role Education, Pontifical University of Puerto Rico. Doctor of Clinical Psychology, Pontifical Catholic University of Puerto Rico.

Jiménez Rosario, Nancy, M.S.N., C.N.S., Dr.Ph., *Professor*, Master of Sciences Nursing, Occupational Health, Universidad del Sagrado Corazón; Master of Science Nursing, Medicine and Surgery, Role Education, Critical Care, Role Education, Pontifical Catholic University of Puerto Rico. Doctor in Health Public. School of Medicine, Ponce, Puerto Rico.

López Forty, Migdalia, M.S.N., C.N.S., *Associate Professor*, Master of Nursing Sciences, Family and Community, Role Education, University of Puerto Rico, Medicals Science Campus, Certificated in Genetic.

Reyes Pérez, David, M.S.N., C.N.S., Ed. D., DMT-A, *Professor*, Master of Sciences Nursing, Medicine and Surgery, Role Education, Critical Care, Pontifical Catholic University of Puerto Rico. Doctor of Education, Curriculum and Instructions, Inter American University of Puerto Rico. Certificated in Hyperbaric Chamber.

Santiago Santiago, Luz, M.S.N., C.N.S., Ph.D.(s), *Associate Professor*, Master of Nursing Sciences, Family and Community, Adult and Critical Care, Role Education, University of Puerto Rico, Medicals Science Campus. Students Doctoral in Research in Education, UNINI.

Tapia Maldonado, Lourdes, M.S.N., C.N.S., *Professor*, Master of Nursing Sciences, Medicine and Family, Role Education, University of Puerto Rico, Medicals Science Campus.

Torres Pabon, Suheil, MPH, DNP., Instructor, Master of Public Health, Midwifery Nursing. University of Puerto Rico, Medicals Science Campus. Doctor of Nursing Practice, Kaiser University.

Valencia Cabrera, Carmen G., M.S.N., C.N.S., *Professor*, Master of Nursing Sciences, Mothers and Children, Role Administration, University of Puerto Rico, Medicals Science Campus.

LIST OF COURSES

ENFE 1007: FUNDAMENTAL CONCEPTS AND PRACTICE OF NURSING I, two (2) credits, six (6) hours of laboratory per week. This course initiates students with basic concepts, skills and nursing techniques to offer patient direct care. Provide the base for the following nursing courses. Also, provides a contemporary approach of nursing practice. Theoretical content are discussed, nursing skills are practiced in simulated laboratory and at the hospital. This is laboratory course consist of simulated skills and practice at real health scenario. The course is located at the first level of the Associate Degree in Nursing (**THIS COURSE IS ELIMINATED IN THE NEW SEQUENCE CURRICULUM 2019**).

ENFE 1016: HISTORIC AND CONTEMPORARY PERSPECTIVES IN NURSING, three (3) credits, three (3) contact hours per week. In this course, aspects related to the history and development of the profession. Emphasize on the legal and ethical aspects of nursing. Contemporary health and nursing problems are discussed.

ENFE 1016: HISTORIC AND CONTEMPORARY PERSPECTIVES IN NURSING, three (3) credits, three (3) contact hours per week. In this course the aspects related to the history and development of the nursing profession are studied. The legal, ethical and contemporary issues and trends in the area of health and nursing are discussed and emphasized. The student is initiated in the knowledge of the theoretical and conceptual foundations of nursing practice, emphasizing Dorothea Orem's theory (**NEW SEQUENCE CURRICULUM 2019**).

ENFE 1021: FUNDAMENTALS CONCEPTS AND PRACTICE OF NURSING II, six (6) credits. Co-requisite: ENFE 1022. Pre-requisite: ENFE 1007. This course continues providing students the basic concepts, skills, and techniques for nursing practice. Apply the Dorothea Orem's Self-care theory at the offering of patient direct care. Student start with the learning identification of universal requisites of human being and health deviation. They apply the nursing process emphasizing assessment and nursing diagnosis. This is part of the first-level course for the Associate Degree in Nursing.

ENFE 1021: FUNDAMENTALS CONCEPTS AND PRACTICE OF NURSING, six (4) credits. Co-requisite: ENFE 1022. In this course the student visualizes the human being as an integral individual within a society and a culture with universal needs of self-care, development deviation and health deviation. The student begins the learning of the identification of the universal requirements of the human begin and deviations of health. It being in the discussion of the nursing process that guides and directs health care. It is a part the first level of the Associate Degree Program (**NEW SEQUENCE CURRICULUM 2019**).

ENFE 1022: LABORATORY OF CONCEPTOS AND PRACTICE OF NURSING II, zero (0) credits, six (6) hours of laboratory per week. Pre-requisite: ENFE 1007, Co-requisite: ENFE 1021. This laboratory course continues providing students basic concepts, skills and techniques for nursing practice to provide patient direct care by applying Dorothea Orem's Self-care Theory. It provides simulated laboratory practice and complementary and supplementary clinics for ENFE 1021 Fundamentals Concepts and Nursing Practice II. This course is part of the first level of the Associate Degree in Nursing.

ENFE 1022: LABORATORY OF CONCEPTS AND PRACTICE OF NURSING, two (2) credits, six (6) hours of laboratory per week. Co-requisite: ENFE 1021. This course initiates the student in concepts, skills and basic techniques of nursing practice to offer direct care to client. It provides the basis for subsequent nursing courses. In addition, it provides a contemporary approach to nursing practice. The theoretical content of the skills is discussed, and they are practiced in the simulated laboratory and in various health care agencies. The nursing process is applied, emphasizing the components of nursing diagnosis and estimation. Provides stimulated laboratory practices and complementary and supplementary clinics. It is a part the first level of the Associate Degree Program (**NEW SEQUENCE CURRICULUM 2019**).

ENFE 1031: NURSING INTERVENTION IN MENTAL HEALTH AND PSYCHIATRY, five (5) credits, three (3) lecture hours per week. Co-requisite: ENFE 1032. Pre-requisite: ENFE 1007, ENFE 1021, ENFE 1022, PSIC 3005. Students are exposed to the historic background, ethical and legal aspects of psychiatry. In addition, students acquire knowledge to apply the principles of mental health promotion, restoration and maintenance. Students will recognize the most common bio-psychosocial deviations in clients in the health-illness continuum. Mental health and mental illness topics, human responses that alter functioning, and disorders that affect psycho-social integrity are discussed. This is a first-level course for the Associate Degree in Nursing.

ENFE 1032: LABORATORY FOR NURSING INTERVENTION IN MENTAL HEALTH AND PSYCHIATRY, zero (0) credits, six (6) hours of laboratory per week. Co-requisite ENFE 1031, Pre-requisite: ENFE 1007, ENFE 1021, ENFE 1022, PSIC 3005. This laboratory is complemented with the theory included in ENFE 1031-Nursing Intervention in Mental Health and Psychiatry. It allows students to apply the principles of promotion, restoration and maintenance of mental health to individuals and groups in the three systems of care: partially compensatory, wholly compensatory and supportive-educative. Students recognize the most common client psycho-social deviations in the health-illness continuum. This is a first-level course for the Associate Degree in Nursing.

ENFE 1045: PHARMACOTHERAPY AND DRUGS CALCULATION, three (3) credits, three (3) contact hours per week. Pre-requisite: MATE 3035. Students learn mathematical dosage formulas for oral and parenteral medications, types of medication, methods and measures for administering medications. In addition, students are exposed to pharmacokinetics and pharmacodynamics. This is a first-level course for the Associate Degree in Nursing.

ENFE 2011: NURSING INTERVENTION WITH THE MOTHER AND NEONATE, five (5) credits, three (3) lecture hours per week. Co-requisite: ENFE 2012. Pre-requisite: ENFE 1007, ENFE 1021, ENFE 1022, ENFE 2041, ENFE 2042, ENFE 1045, BIOL 3741-3743, BIOL 3742-3744. This course provides students with the knowledge and skills to promote self-care of mothers during pregnancy, birth, puerperium and care for the newborn, using the nursing process. Physiological, psychological, social and spiritual integrity of the client and her family are promoted. The course considers health deviations in the different maternity process. It determines the nursing interventions necessary to help the mother and the newborn maintain their integrity.

ENFE 2012: LABORATORY FOR NURSING INTERVENTION WITH THE MOTHER AND THE NEONATE, zero (0) credits, six (6) laboratory hours per week. Pre-requisite: ENFE 1007, ENFE 1021, ENFE 1022, ENFE 2041, ENFE 2042, ENFE 1045, BIOL 3741-3743, BIOL 3742-3744. This laboratory course provides students the opportunity to intervene with pregnant women and newborns. It includes simulated laboratory practice and complementary and supplementary clinical practice for ENFE 2011: Nursing Intervention with the Mother and the Newborn. This is a second level course for the Associate Degree in Nursing.

ENFE 2041: MEDICAL-SURGICAL NURSING I, six (6) credits, four (4) hours of lecture per week. Pre-requisite: BIOL 3741-3743, BIOL 3742-3744, ENFE 1007, ENFE 1021, ENFE 1022, ENFE 1045. This course is based on Dorothea Orem's theory, considering the person-environment interaction and the nursing process. The content is based on the principles involved in the care of individuals who show deviation from self-care requirements. Emphasis is human's need for liquids and electrolytes, elimination, nutrition, integrity of the skin and the senses. Nursing intervention during learning is directed towards the initiation of the practice of health promotion, treatment and rehabilitation of clients at the optimum level of health in the health-illness continuum.

ENFE 2042: LABORATORY FOR MEDICAL-SURGICAL NURSING I, zero (0) credits, six (6) hours of laboratory per week. Pre-requisite: ENFE 1007, ENFE 1021, ENFE 1022, ENFE 1045, BIOL 3741-3743, BIOL 3742-3744. In this course, students intervene with clients with deviations in liquid and electrolytes, elimination, nutrition, integrity of skin, senses and immunological response. The course affords students experiences in a simulated laboratory and general hospital experience for initiation in the skills included in the course. This is a second-level course for the Associate Degree in Nursing.

ENFE 2043: MEDICAL-SURGICAL NURSING II, six (6) credits, four (4) hours of lecture per week. Co-requisite: ENFE 2044. Pre-requisite: ENFE 1007, ENFE 1021, ENFE 1022, ENFE 2041, ENFE 2042, ENFE 1045, BIOL 3741-3743, BIOL 3742-3744. This course is based on Dorothea Orem self-care theory, considering man-environment interaction and the nursing process. The course will provide students the opportunity to develop knowledge, skills and fundamental attitudes to care clients who present deviations in the self-care requirements. This course responds to the existing needs of health in Puerto Rico, according to the causes of morbidity and mortality in the Vital Statistics of Puerto Rico, such as: Pulmonary disease, cardiovascular diseases, cerebral vascular accident, cancer, traumas and conditions of the genital-urinary system. This course is placed in the third level of the ADN program.

ENFE 2044: LABORATORY FOR MEDICAL-SURGICAL NURSING II, two (2) credits, six (6) hours of laboratory per week. Co-requisite: ENFE 2043. Pre-requisite: ENFE 1007, ENFE 1021, ENFE 1022, ENFE 2041, ENFE 2042, ENFE 1045, BIOL 3741-3743, BIOL 3742-3744. This laboratory course provides to the student the opportunity to care clients who exhibit health deviations on self-care deficit in clients with: Pulmonary diseases, cardiovascular disease, cerebral vascular accident, cancer, traumas and conditions of the genitor-urinary system. This course is placed in the third level of the ADN program.

ENFE 2051: PEDIATRIC NURSING INTERVENTION, (3) credits, three (3) hours of lecture. Co-requisite: ENFE 2052. Pre-requisite: ENFE 1007, ENFE 1021, ENFE 1022, ENFE 2041, ENFE 2042, ENFE 1045. This course provides students the opportunity to acquire knowledge, skills and activities needed to provide direct care to children and adolescents with health deviations. The content is based on the factors associated with growth and development stages and how they affect children and adolescents in their universal requirements and health deviations.

ENFE 2052: LABORATORY FOR PEDIATRIC NURSING INTERVENTION, two (2) credits, six (6) hours of laboratory per week. Pre-requisite: ENFE 1007, ENFE 1021, ENFE 1022, ENFE 2041, ENFE 2042, ENFE 1042. This course offers students the opportunity to intervene with pediatric clients at different stages of growth and development. It provides simulated laboratory and clinical practice, to complement and supplement the course on Pediatric Nursing Intervention. This is a third-level course for the Associate Degree in Nursing.

ASSOCIATE DEGREE IN CHEMICAL ENGINEERING TECHNOLOGY (2015)

The Associate Degree in Chemical Engineering Technology has an applied curriculum which integrates knowledge in engineering and chemistry for the support of engineering activities in an industrial scenario. Students are prepared to perform in fields such as laboratory, manufacturing, operations and maintenance of chemical processes. Emphasis is given to the application of theory through an intense program of laboratory experiences.

MISSION

Offer a continuously improved chemical engineering technology program, providing students with the knowledge and technical skills required to work in the manufacturing, operation and maintenance of chemical processes in industrial facilities.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDIT
		S
TEQU 1001	Integrated Chemistry I	5
TEQU 1002	Integrated Chemistry Lab. I	0
MATE 1031	Technical Mathematics Fundamentals I	4
INGL 3101*	Basic English I	3
INGL 3113*	Oral Practice I	0
ESPA 3101	Basic Spanish I	3
	TOTAL	15

Second Semester		
CODE	DESCRIPTION	CREDITS
TEQU 1003	Integrated Chemistry II	5
TEQU 1004	Integrated Chemistry Lab. II	0
TEQU 3105	Introduction to Chemical Engineering Technology	3
MATE 1032	Technical Mathematics Fundamentals II	4
INGL 3102*	Basic English II	3
INGL 3114*	Oral Practice II	0
ESPA 3102	Basic Spanish II	3
	TOTAL	18

* Students who score above 580 on the English language part of the College Board Examination will take INGL 3103-Intermediate English I and INGL 3104-Intermediate English II. This sequence does not require the oral practice laboratory.

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
TEQU 2001	Integrated Chemistry III	4
TEQU 2002	Integrated Chemistry Lab. III	0
TEQU 2011	Unit Operations I	4
TEQU 2012	Unit Operations Lab. I	0
FISI 1001	Technical Physics I	3
FISI 1002	Technical Physics Lab. I	1
CISO 3121	Introduction to Social Sciences	3
	TOTAL	15

Second Semester		
CODE	DESCRIPTION	CREDITS
TEQU 2003	Integrated Chemistry IV	4
TEQU 2004	Integrated Chemistry Lab. IV	0
TEQU 2007	Process Measurement and Control	3
TEQU 2009	Process Measurement and Control Lab.	0
TEQU 2013	Unit Operations II	4
TEQU 2014	Unit Operations Lab. II	0
FISI 1003	Technical Physics II	3
FISI 1004	Technical Physics Lab. II	1
TEQU 2008	Chemical Engineering Technology Seminar	1
HUMA3101	Occidental Culture I	3
	TOTAL	19
		Total credits 67

LIST OF COURSES

FISI

FISI 1001: TECHNICAL PHYSICS I, three (3) credits, three (3) contact hours per week. Introductory course in physics that concentrates on the technical applications of the fundamental concepts of kinematics, dynamics, analytical mechanics, energy, hydraulics and thermodynamics.

FISI 1002: TECHNICAL PHYSICS I LAB, one (1) credit, three (3) contact hours per week. Three hours a week, divided in the following manner: one hour of discussion of theory and two hours of experiments including mechanics and heat.

FISI 1003: TECHNICAL PHYSICS II, three (3) credits, three (3) contact hours per week. **Pre-requisites: MATE 1001, FISI 1001.** The technical applications of electromagnetism, optics and modern physics are discussed.

FISI 1004: TECHNICAL PHYSICS II LAB, one (1) credit, three (3) contact hours per week. **Pre-requisites: FISI 1001, FISI 1002.** These hours a week divided in the following manner: one hour of discussion and two hours of experiments including experiments on electromagnetism and optics.

TEQU

TEQU 1001: INTEGRATED CHEMISTRY, five (5) credits, three (3) contact hours per week. **Co-requisite: TEQU 1002.** The properties of matter, atomic structure, chemical bonding, molecular structure, solutions, acids and bases. Introduction to organic chemistry.

TEQU 1002: INTEGRATED CHEMISTRY I LABORATORY, zero (0) credits, six (6) contact hours per week. **Co-requisite: TEQU 1001.** This lab includes experiments in volumetric analysis, density, paper and gas chromatography and solvent extractions.

TEQU 1003: INTEGRATED CHEMISTRY II, three (3) credits, three (3) hours per week. **Pre-requisite: TEQU 1001. Co-requisite: TEQU 1004.** Kinetics, chemical equilibrium, oxidation, oxidation and reduction, electrochemistry, thermodynamics, elementary organic chemistry.

TEQU 1004: INTEGRATED CHEMISTRY II LAB, zero (0) credits, six (6) contact hours. **Pre-requisites: TEQU 1002. Co-requisite: TEQU 1003.** This lab includes experiments in calorimetry, volumetric analysis, chemical reactions rates methods.

TEQU 2001: INTEGRATED CHEMISTRY, four (4) credits, three (3) contact hours. Pre-requisites: TEQU 1003, TEQU 1004. Theory of volumetric analysis, gravimetric analysis, neutralization, electrochemistry, visible and UR spectrometry, atomic absorption, flame photometry, quantitative aspects of chemical equilibrium.

TEQU 2002: INTEGRATED CHEMISTRY III LAB, zero (0) credits, three (3) contact hours per week. Pre-requisites: TEQU 1004. Co-requisite: TEQU 2001. Classical methods of analysis, optical and electrical methods and chromatography. This lab meets twice a week.

TEQU 2003: CHEMISTRY IV (COMPENDIUM), four (4) credits, three (3) contact hours per week. Pre-requisite: TEQU 2001, TEQU 2002. Co-requisite: TEQU 2003.The theory of chromatography, infrared spectroscopy, polarimetry, reactivity and mechanisms, reactions and properties of functional groups, kinetics and equilibrium.

TEQU 2004: CHEMISTRY IV LABORATORY, zero (0) credits, three (3) contact hours per week. Pre-requisites: TEQU 2002. Co-requisite: TEQU 2004. It includes experiments in organic synthesis, polarimetry, distillation, spectra, infrared spectra, re-crystallization, functional organic analysis and identification of organic compounds.

TEQU 2007: PROCESS MEASUREMENT AND CONTROL, three (3) credits, three (3) contact hours per week. Control and measure systems for temperature, pressure, fluids, and liquids levels in industrial operations.

TEQU 2008: SEMINAR, one (1) credit, one (1) contact hours per week. Orientation on the Chemical Engineering Technology program and the role of the technician in industry and in the laboratory. The relationship between technology and other professions. Field trips to different industries and orientation on the technician's job in each one.

TEQU 2009: PROCESS MEASUREMENT AND CONTROL LABORATORY, zero (0) credits, three (3) contact hours per week. Pre-requisites: MATE 3004. Co-requisite: TEQU 2007. Supervised practice in the use of control instruments required in the operation and maintenance of a chemical process with industrial controllers.

TEQU 2011: UNIT OPERATIONS I, four (4) credits, three (3) contact hours per week. Pre-requisites: TEQU 1008. Co-requisite: TEQU 2012. This course studies the principles of chemical engineering with emphasis on the processing of chemicals. It includes matter and energy balance and the principles that govern fluids and heat.

TEQU 2012: UNIT OPERATIONS LABORATORY I, zero (0) credits, four (4) contact hours per week. Co-requisite: TEQU 2011. This lab includes experiments in heat transfer, fluid behavior with emphasis on their industrial applications.

TEQU 2013: UNIT OPERATIONS II, four (4) credits, three (3) contact hours per week. Pre-requisites: TEQU 2011, TEQU 2012. Co-requisite: TEQU 2014. The study and discussion of the following processes: evaporation, distillation, extraction, sedimentation and other processes of mechanical separation.

TEQU 2014: UNIT OPERATIONS II LABORATORY, zero (0) credits, four (4) contact hours per week. Pre-requisites: TEQU 2011, TEQU 2012. Co-requisite: TEQU 2013. This lab includes the study of separation processes and control equipment, as applied to control processes.

TEQU 3105: INTRODUCTION TO CHEMICAL ENGINEERING TECHNOLOGY, three (3) credits, three (3) contact hours per week. Study of mathematical, physical and chemical principles applied to chemical processes and unit operations. Development of skills in the use and conversion of unit systems, experimental data evaluation, graphical representation of data and interpretation of physical and chemical properties diagrams.

ASSOCIATE DEGREE IN VETERINARY TECHNOLOGY (2706)

The Associate Degree in Veterinary Technology Program offers its students diverse academic, paraprofessional, and mentoring experiences in the field of veterinary ~~medicine~~ technology. The emphasis is in the clinical area but also ~~are considered~~ considers: scientific research, regulatory medicine and public health venues. The Veterinary Technician is an integral part in the field of veterinary sciences and will provide professional assistance to veterinarians, scientific research, animal control organizations and dependencies, for the conservation of public health and disease prevention. The Veterinary Technician must have passion and commitment to animal welfare, supplemented by extensive knowledge in the care and handling of animals, their anatomy and physiology. ~~It~~ They will be ~~trained~~ instructed in medical and surgical nursing techniques, anesthesiology, radiology and clinical laboratory procedures. Also it will be able to recognize the major diseases affecting pets and implementation protocols for prevention of such conditions. During the last semester students are assigned to Practice Centers scattered along the island to complete 240 hours of practical instruction. Each individual is responsible for their own transportation. Work as a Veterinary Technician requires certain physical abilities, and individuals unable to lift or hold a 50 lb dog should abstain to pursue it. The students in the program will approve 65 credits with a GPA of 2.0 in order to graduate from the associate degree. **This Associate degree is accredited by the American Medical Veterinary Association (AVMA).**

MISSION

Provide the highest quality education through professional and academic experiences, as well as mentoring, veterinary technicians that will be part of the veterinary health care team which ensures animal welfare and public health.

Program Goals and Graduate Profile

Graduates of the Associate Degree in Veterinary Technology will:

1. Actively participate in the management of the veterinary facility.
2. Demonstrate skills in oral and written communication in a professional manner.
3. Comply with applicable laws and the code of ethics of the veterinary technician.
4. Manage effectively and safely dispense drugs prescribed to the patient, and accurately explain ~~the~~ related information.
5. ~~Applied~~ Apply techniques of health assessment and monitoring for a variety of animal species.
6. Understand and demonstrate therapy, prophylaxis, accommodation, nutrition, reproduction and dentistry for a variety of animal species.
7. Manage effectively and safely the patient at all stages of anesthesia ~~the~~ procedure.
8. Know the procedures and equipment used in routine surgery.
9. Perform clinical analysis of specimens in the laboratory.
10. Produce effectively and safely X-rays and ultrasound images of diagnostic value.
11. Effectively and safely manage common species of laboratory animals used.
12. Promote the safe and effective care of birds, reptiles, amphibians, guinea pigs and hamsters.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
TVET 2001	Veterinary Anatomy & Physiology	4
TVET 2002	Veterinary Anatomy & Physiology Lab	0
TVET 2005	Introduction to Veterinary Technology	3
BIOL 3011	General Biology I	4
BIOL 3013	General Biology I Laboratory	0
ESPA 3101	Basic Spanish I	3
HUMA	General Education Humanities Course	3
TOTAL		17

Second Semester		
CODE	DESCRIPTION	CREDIT
TVET 2011	Veterinary Technology I	3
TVET 2013	Veterinary Technology I Laboratory	0
TVET 2008	Enfermeria Veterinaria Veterinary Nursing	3
QUIM 3141	Principles of General, Organic and Biological Chemistry	4
QUIM 3142	Principles of Gen, Organic and Biological Chemistry Lab	0
ESPA 3102	Basic Spanish II	3
MATE 3035	Health Allied Math	3
TOTAL		16

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDIT
TVET 2012	Veterinary Technology II	3
TVET 2014	Veterinary Technology II Laboratory	0
TVET 2015	Large Animal Nursing and Husbandry	3
TVET 2016	Large Animal Nursing and Husbandry Lab	0
INGL 3101	Basic English I	3
INGL 3113	Basic English I Lab	0
BIOL 3770	General Microbiology	3
BIOL 3771	General Microbiology Lab	0
TVET 3017	Data Management and veterinary office administration	3
TOTAL		15
Second Semester		
CODE	DESCRIPTION	CREDIT
TVET 2026	Infectious Diseases	2
TVET 2019	Veterinary Radiology	2
TVET 2018	Veterinary Pharmacology	2
TVET 2027	Veterinary Technology Practicum	6
TVET 2028	Veterinary Technology Practicum Lab	0
INGL 3102	Basic English II	3
INGL 3114	Basic English II Lab	0
CISO	General education course in Social Sciences	3
TOTAL		18

LIST OF COURSES

TVET 2001/02: VETERINARY ANATOMY AND PHYSIOLOGY/LAB. Histological, anatomical and physiological study of muscular, skeletal, epithelial, respiratory, cardiovascular, urinary, endocrine, nervous and immune systems. Discussion of the interrelation between systems in normal animals and in the case of the main veterinary diseases. The course studies the anatomical and physiological terminology relating to the domestic animals. The course takes the dog as a model and is compared with other domestic animals using skeletons, models, audiovisual resources, specimens of dissection in laboratory experiences and virtual resources.

TVET 2005: INTRODUCTION TO VETERINARY TECHNOLOGY. In this course the roles and responsibilities of the veterinary technician are described as are their study, labor alternatives and professional organizations discussed. It includes safety rules, ethics and laws that apply to the exercise of their profession and the welfare of the animals. Also this course defines medical terms, basic economic and management concepts of the veterinary hospital. Identifies the major species and breeds of domestic animals. It defines the concepts of behavior, restraint, and security. Also demonstrates basic techniques for patient monitoring, medical records, physical examination, sampling and vaccination protocols.

TVET 2008: VETERINARY NURSING. Through lectures, class discussions and demonstrations, veterinary technology students will study techniques of assessment / monitoring of patients with emphasis in the hospitalized patient. The student is expected to develop knowledge that enables him in the care and tending to the needs of the patient. It will examine different forms of therapy, management of wounds and bandages, restraint and administration of medications. Public health and nutritional aspects of the patient in the hospital are discussed. Also studies the reproduction of small species and assisted reproductive techniques. In addition, the student will be instructed in surgical nursing with emphasis in asepsis, preparation, and care of the patient before and after a common surgical procedure.

TVET 2011: VETERINARY TECHNOLOGY I. The study of techniques in the management of patients, clinical sampling and the use of clinical laboratory equipment. It also instructs in the analysis and interpretation of blood and urine samples. Diagnostic tests for anemia and possible treatments are discussed. Students are also instructed in cytology sampling and testing for ophthalmic diagnosis.

TVET 2012: VETERINARY TECHNOLOGY II. Study of techniques and protocols for medical emergencies, poisonings and intensive care. The course illustrates the techniques and basic procedures for necropsy and euthanasia. The student is expected to develop effective and safe handling of the patient at all stages of the anesthetic procedure. In addition, the handling of birds, small mammals, fish, exotic species and laboratory animals is discussed.

TVET 2013: VETERINARY TECHNOLOGY I LABORATORY. Execution of clinical analysis techniques, management of patients and the use of clinical laboratory equipment, veterinary technology student are trained in the procedure, analysis and interpretation of blood and urine samples. Anemia diagnostic tests are performed and transfusion procedures are discussed. The students get experience in preparing cytology and ophthalmic diagnostic testing.

TVET 2014: VETERINARY TECHNOLOGY II. Clinical exercises and participatory demonstrations of therapeutic techniques of medical emergencies, including toxicities and intensive care are applied. Basic necropsy procedures and techniques are practiced. The students get training in the effective and safe handling of the patient at all stages of the anesthetic procedures. Management of birds, small mammals, fish, exotic species and laboratory animals is practiced.

TVET 2015/16: LARGE ANIMAL NURSING/LAB. In this course large animal husbandry and farm animal reproduction, nutrition and handling is discussed. It also describes their diseases and disorders. The physiological parameters used to monitor hospitalization, routine laboratory studies, as well as medical and surgical nursing are shown. It also discusses techniques in necropsy, dentistry and assisted reproduction for farm animals.

TVET 2018: VETERINARY PHARMACOLOGY. This course discusses the pharmacological principles of prescription drugs in the field of veterinary medicine. Familiarizes the student with the latest products and pharmacological advances. Teaches the student the various techniques for administration and dosage of medications for patients under veterinary care.

TVET 2019: VETERINARY RADIOLOGY. Through lectures, class discussions and demonstrations veterinary technology students will study the security measures to be considered in the various radiological studies. The principles of radiography, endoscopy and ultrasound are discussed in order to produce diagnostic images. In addition, the student is expected to develop the skills necessary to identify, file and registry of radiographs.

TVET 2026: INFECTIOUS DISEASES. This course discusses the most common infectious diseases of domestic animals with special emphasis on zoonosis. It discusses practical concepts of immunity and protocols for vaccination. It interrelates etiology, symptomatology, pathophysiology, diagnosis and control of diseases caused by viruses, rickettsia, chlamydia, mycoplasma, bacteria, fungi and protozoa. Instructs the student in collection and submission of samples for diagnostic purposes.

TVET 2027: VETERINARY TECHNOLOGY PRACTICUM. This course is the culmination of studies. The course enables students to apply and integrate the knowledge and skills developed during his years of academic training through lectures, demonstrations, writing and presenting progress reports of the practicum center experiences.

TVET 2028: VETERINARY TECHNOLOGY PRACTICUM LABORATORY. It is the application of the concepts acquired offering real-life situations as they occur in the assigned practicum facility. In this scenario the student will have the opportunity to execute under individual instruction by the instructor and supervisor 16 hours a week for a total of 240 hours. It will deepen and expand his/her knowledge and skills in different clinical areas. The student will be observed and evaluated in performing vet tech duties.

BACHELOR DEGREES

BUSINESS ADMINISTRATION DEPARTMENT

BACHELOR'S DEGREE IN BUSINESS ADMINISTRATION

The Department of Business Administration offers a Bachelor in Business Administration with majors in four areas: Accounting, Finance, Management and Marketing. Graduates from the program are prepared in modern administration and business techniques to join the world of private and public business in fields such as management of human resources, auditing, accounting, and preparation of financial statements, investments, real estate, financial statement analysis, marketing, and research on economic changes. **The Bachelor degree in all four majors is accredited by the Accreditation Council for Business Schools and Programs (ACBSP).**

MISSION

In accord with UPRA's mission, the Department of Business Administration aspires to form citizens who are capable of making ethical and well-informed decisions that result in professional benefit and the improvement of society in general; citizens who are committed with the necessary integrity to promote respect for cultural and human diversity in social organizations and businesses within and without our country.

The faculty of the Business Administration Department exists to:

- provide undergraduate students with an up to date education in business administration.
- promote the effective administration of organizations.
- encourage research and creative activity.
- add ethical, social and professional values by means of a dynamic and relevant curriculum, using traditional and non-traditional methods of assessment.
- encourage our constituents to actively participate in Departmental affairs.

VISION

To be recognized as the best Business Administration program by providing a student centered, innovative education emphasizing social responsibility which is dynamic and responsive to the needs of our constituents.

**BACHELOR IN BUSINESS ADMINISTRATION
WITH MAJOR IN ACCOUNTING¹⁰
(0302)**

The study of accounting provides students with ample knowledge, enabling them to assume a variety of responsibilities within an enterprise. Accountants interpret financial transactions and translate them to the language of accounting, providing relevant data through financial reports. This information allows users to make a variety of decisions.

A person trained in accounting may work in banking, private enterprises (profit or non-profit), public service or in public accounting firms. Employment opportunities in accounting include certified public accountants, controllers, bank officers, cost managers, tax specialists, budget managers, financial analysts, government accountants and self employment. Many accountants reach mid and high level positions in a variety of organizations. **The program is accredited by the Accreditation Council for Business Schools and Programs (ACBSP).**

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3101	Basic Spanish I	3
INGL 3101 ¹¹	Basic English I	3
INGL 3113	Basic English I Laboratory	0
MECU 3031 ¹²	Quantitative Methods for Business Administration I	3
CONT 3005 ¹³	Introduction to the Elements Accounting I	4
REHU 4425	Human Behavior in the Organization	3
TOTAL		16

¹⁰ Curricular sequences are continuously revised. Students are encouraged to check with their departments to be informed of the latest revisions.

¹¹ Students who score above 580 on the English language part of the College Board Examination will take INGL 3103 - Intermediate English I and INGL 3104 - Intermediate English II. This sequence does not require the oral practice laboratory.

¹² It includes one hour of laboratory per week.

¹³ Students are discouraged from taking more than three accounting courses per semester.

Second Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3102	Basic Spanish II	3
INGL 3102 ²	Basic English II	3
INGL 3114 ²	Basic English II Laboratory	0
MECU 3032	Quantitative Methods for Business Administration II	3
CONT 3006	Introduction to the Elements of Accounting II	4
ADMI 4005	Introduction to Managerial Activity	3
TOTAL		16

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CONT 3101	Philosophy, Theory and Problems of Accounting I	3
ADMI 3007 ¹⁴	Introduction to Computerized Data Processing	3
ESPA 3215	Business Expression and Communication	3
ESTA 3001	Business Statistics I	3
INCO 4008 ⁵	Business Strategic Communication	2
ECON 3021	Principles of Economics I	3
TOTAL		17

Second Semester		
CODE	DESCRIPTION	CREDITS
CONT 3102	Philosophy, Theory and Problems of Accounting II	3
CONT 3025	Cost Accounting	4
HUMA XXXX	General Education course in Humanities	3
ESTA 3002	Business Statistics II	3
INCO 4006 ¹⁵	Business Strategic Communication	2
ECON 3022	Principles of Economics II	3
TOTAL		17

¹⁴ It includes one hour of laboratory per week.

¹⁵ It includes one hour of laboratory per week.

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CONT 3103	Philosophy, Theory and Problems of Accounting III	3
CONT 4058 ⁷	Advanced Financial Accounting	3
MERC 3115	Principles of Marketing	3
FINA 3107	Financial Markets and Institutions	3
HUMAXXXX	General Education course in Humanities	3
	Free Elective	3
	TOTAL	18

Second Semester		
CODE	DESCRIPTION	CREDITS
ADMI 4225	Principles of International Business	3
CONT 4039	Puerto Rico Income Taxes	4
LEGA 4005	Legal Aspects in Business	3
FINA 3106 ⁷	Financial Management	3
¹⁵	General Education course in Sciences	3
	Free Elective	3
	TOTAL	19

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CONT 4016	Recent Developments in Accounting	3
CONT XXXX ¹⁶	Guided Elective in Accounting	3
CONT 3115 ¹⁷	Computerized Accounting	3
ADMI 4007	Strategic Management	3
¹⁸	General Education course in Science	3
	Free Elective	3
	TOTAL	18

¹⁶ Guided elective will be selected from departmental approved guided electives list.

¹⁷ It includes one hour of laboratory per week.

¹⁸ General Education courses will be selected as included from section General Education Program.

Second Semester		
CODE	DESCRIPTION	CREDITS
CONT 4038	Federal Taxes	4
CONT 4017 ⁹	Auditing Accounts and Systems	3
ADMI 4017	Business Ethics and Social Responsibility	3
ADMI 3100	New Business Development	3
	Free Elective	3
	TOTAL	16

GUIDED ELECTIVES⁸

CODE	DESCRIPTION	CREDITS
CONT 4010	Income Tax Partnerships and Corporations of Puerto Rico	3
CONT 4027	Cost Analysis and Control	3
CONT 4029	International Accounting	3
CONT 4050	Principles of Fraud Prevention and Detection	3

The courses of Practice Internships (ADEM 4015, INTD 4995) can only be utilized as free electives and will never be considered a guided elective. In order to take course ADEM 4015 the student must have at least twelve (12) concentration credits approved.

**BACHELOR IN BUSINESS ADMINISTRATION
WITH MAJOR IN FINANCE¹⁹
(0304)**

The field of finance is broad and dynamic since it affects the lives of all persons and organizations. In general terms, finance is defined as the art and science that handles money to make the best decisions on its use. Therefore, it encompasses various fields of study and a wide range of professional opportunities. **The program is accredited by the Accreditation Council for Business Schools and Programs (ACBSP).**

Areas of study include insurance, corporate finance, financial markets, banking, real estate, international finance and investments. Professional opportunities in the field include financial analyst, finance manager, cash manager, credit manager, budget manager, insurance broker, real estate broker, bank manager, accounts analyst and investment portfolio manager.

FIRST YEAR

Fist Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3101	Basic Spanish I	3
INGL 3101 ²⁰	Basic English I	3
INGL 3113	Basic English I Laboratory	0
MECU 3031 ²¹	Quantitative Methods for Business Administration I	3
REHU 4425	Human Behavior in the Organization	3
CONT 3005	Introduction to the Elements of Accounting I	4
TOTAL		16

¹⁹ Curricular sequences are continuously revised. Students are encouraged to check with their departments to be informed of the latest revisions.

²⁰ Students who score above 580 on the English language part of the College Board Examination will take INGL 3103 - Intermediate English I and INGL 3104 - Intermediate English II. This sequence does not require the oral practice laboratory.

²¹ It includes one hour of laboratory per week.

Second Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3102	Basic Spanish II	3
INGL 3102 ²²	Basic English II	3
INGL 3114	Basic English II Laboratory	0
MECU 3032	Quantitative Methods for Business Administration II	3
ADMI 4005	Introduction to Managerial Activity	3
CONT 3006	Introduction to the Elements of Accounting II	4
TOTAL		16

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
FINA 3107	Financial Markets and Institutions	3
ESTA 3001	Business Statistics I	3
ECON 3021	Principles of Economics I	3
INCO 4008 ²³	Business Strategic Communication	2
ADMI 3007 ¹⁵	Introduction to Computerized Data Processing	3
ESPA 3215	Business Expression and Communication	3
TOTAL		17

Second Semester		
CODE	DESCRIPTION	CREDITS
FINA 4016 ²⁴	Introduction to Real Estate	3
ESTA 3002	Business Statistics II	3
ECON 3022	Principles of Economics II	3
INCO 4006 ²⁵	Business Report Writing	2
FINA 3106 ¹⁷	Financial Management	3
HUMA	General Education course in Humanities	3
XXXX ²⁶		
TOTAL		17

²² Students who score above 580 on the English language part of the College Board Examination will take INGL 3103 - Intermediate English I and INGL 3104 - Intermediate English II. This sequence does not require the oral practice laboratory.

²³ Includes one hour of laboratory per week.

²⁴ Students are discouraged from taking more than three finance courses per semester.

²⁵ Includes one hour of laboratory per week.

²⁶ General Education courses will be selected as identified from section General Education Program.

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
FINA 4125	Intermediate Financial Management	3
BASE 2007	Financial Statements Analysis	3
MERC 3115	Principles of Marketing	3
HUMA	General Education course in Humanities	3
XXXX ¹⁸	Free Elective	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
FINA 3009	Risk Management and Insurance	3
FINA 4037	Investments Principles	3
ADMI 4225	Principles of International Business	3
FINA XXXX ²⁷	Guided Elective in Finance	3
	Free Elective	3
18	General Education in Science	3
TOTAL		18

²⁷ Guided elective will be selected from departmental approved guided electives list.

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
FINA 4020	International Finance	3
LEGA 4005	Legal Aspects in Business	3
ADMI 3100	New Business Development	3
²⁸	General Education in Science	3
FINA XXXX ²⁹	Guided Elective in Finance	3
	Free Elective	3
	TOTAL	18

Second Semester		
CODE	DESCRIPTION	CREDITS
FINA 4010	Entrepreneurial Finance	3
ADMI 4007	Strategic Management	3
FINA XXXX ²¹	Guided Elective in Finance	3
ADMI 4017	Business Ethics and Social Responsibility	3
	Free Elective	3
	TOTAL	15

GUIDED ELECTIVES IN FINANCE

CODE	DESCRIPTION	CREDITS
FINA 4009	Credit and Collection	3
FINA 4057	Personal Finance	3
FINA 4005	Life, Health and Retirement Insurance	3
FINA 4039	Public Income	3
FINA 4050	Financial Markets	3

The courses of Practice Internships (ADEM 4015, INTD 4995) can only be utilized as free electives and will never be considered a guided elective. In order to take course ADEM 4015 the student must have at least twelve (12) concentration credits approved.

²⁸ General Education course will be selected as identified from section General Education program.

²⁹ Guided elective will be selected from departmental approved guided electives list.

**BACHELOR IN BUSINESS ADMINISTRATION
WITH MAJOR IN MANAGEMENT³⁰
(0305)**

The field of management includes activities related to administration and management of organizations. Management is a continuous activity which involves attaining important organizational objectives through administrative functions. A manager plans, organizes and distributes human and non-human resources influences and controls the activities of the organization. Graduates from this program are prepared in modern administration techniques and are ready to join public and private enterprises. Prospective employment opportunities in the field include supervising and management positions in private organizations, government and profit and non-profit commercial enterprises. **The program is accredited by the Accreditation Council for Business Schools and Programs (ACBSP).**

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3101	Basic Spanish I	3
INGL 3101 ³¹	Basic English I	3
INGL 3113	Basic English I Laboratory	0
MECU 3031 ³²	Quantitative Methods for Business Administration I	3
ADMI 4005	Introduction to Managerial Activity	3
ADMI 3007 ²⁴	Introduction to Computerized Data Processing	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3102	Basic Spanish II	3
INGL 3102	Basic English II	3
INGL 3114	Basic English II Laboratory	0
MECU 3032	Quantitative Methods for Business Administration II	3
ESTA 3001	Business Statistics I	3
REHU 4425	Human Behavior in the Organization	3
TOTAL		15

³⁰ Curricular sequences are continuously revised. Students are encouraged to check with their departments to be informed of the latest revisions.

³¹ Students who score above 580 on the English language part of the College Board Examination will take INGL 3103 - Intermediate English I and INGL 3104 - Intermediate English II. This sequence does not require the oral practice laboratory.

³² It includes one hour of laboratory per week.

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MERC 3115	Principles of Marketing	3
ESTA 3002	Business Statistics II	3
REHU 4405	Management of Human Resources	3
INCO 4008 ³³	Business Strategic Communication	2
ESPA 3215	Business Expression and Communication	3
HUMA XXXX ³⁴	General Education course in Humanities	3
TOTAL		17

Second Semester		
CODE	DESCRIPTION	CREDITS
CONT 3005	Introduction to the Elements of Accounting I	4
GERE 4027	Principles of Supervision	3
ECON 3021	Principles of Economics I	3
INCO 4006 ²⁵	Business Report Writing	2
ADMI 4415	Leadership	3
HUMA XXXX ²⁵	General Education course in Humanities	3
TOTAL		18

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CONT 3006	Introduction to the Elements of Accounting II	4
ECON 3022	Principles of Economics II	3
REHU 4419	Labor Law and Jurisprudence	3
LEGA 4005	Legal Aspects in Business	3
	Free Elective	3
TOTAL		16

³³ It includes one hour of laboratory per week.

³⁴ General Education courses will be selected as included from section General Education Program.

Second Semester

CODE	DESCRIPTION	CREDITS
FINA 3107	Financial Markets and Institutions	3
CONT 4036	Managerial Accounting	4
³⁵	General Education in Science	3
³⁶	Guided Elective in Management	3
	Free Elective	3
TOTAL		16

FOURTH YEAR

First Semester

CODE	DESCRIPTION	CREDITS
REHU 4407	Compensation Systems	3
ADMI 4017	Business Ethics and Social Responsibility	3
ADMI 3100	New Business Development	3
FINA 3106 ³⁷	Financial Management	3
²⁷	Guided Elective in Management	3
	Free Elective	3
TOTAL		18

Second Semester

CODE	DESCRIPTION	CREDITS
ADMI 4007	Strategic Management	3
²⁶	General Education in Science	3
²⁷	Guided Elective in Management	3
ADMI 4425	Principles of International Commerce	3
	Free Elective	3
TOTAL		15

³⁵ General Education courses will be selected as identified from section General Education Program.

³⁶ Guided elective will be selected from departmental approved guided electives list.

³⁷ Includes one hour of laboratory per week.

GUIDED ELECTIVES IN MANAGEMENT²⁷

CODE	DESCRIPTION	CREDITS
GERP 2005	Production Management	3
REHU 4435	International Human Resources Management	3
REHU 4436	Recruitment and Selection of Employee	3
REHU 4437	Training and Employee Development	3
REHU 4406	Labor Relations	3

The courses of Practice Internships (ADEM 4016, INTD 4995) can only be utilized as free electives and will never be considered a guided elective. In order to take course ADEM 4016 the student must have at least twelve (12) concentration credits approved.

**BACHELOR IN BUSINESS ADMINISTRATION
WITH MAJOR IN MARKETING³⁸
(0305)**

Marketing means planning and developing a product or service, setting its price, promoting it and establishing its distribution, with the purpose of meeting the needs and desires of individuals and organizations. Some areas of study are store management, sales techniques, advertising, public relations, market research and international marketing. Professional opportunities in this field include marketing manager, public relations officer, sales manager, and market researcher. This program offers an internship program for outstanding students. **The program is accredited by the Accreditation Council for Business Schools and Programs (ACBSP).**

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3101	Basic Spanish I	3
INGL 3101 ³⁹	Basic English I	3
INGL 3113	Basic English I Laboratory	0
MECU 3031 ⁴⁰	Quantitative Methods for Business Administration I	3
ADMI 4005	Introduction to Managerial Activity	3
ADMI 3007 ³⁴	Introduction to Computerized Data Processing	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3102	Basic Spanish II	3
INGL 3102	Basic English II	3
INGL 3114	Basic English II Laboratory	0
MECU 3032	Quantitative Methods for Business Administration II	3
REHU 4425	Human Behavior in the Organization	3
MERC 3115	Principles of Marketing	3
TOTAL		15

³⁸ Curricular sequences are continuously revised. Students are encouraged to check with their departments to be informed of the latest revisions.

³⁹ Students who score above 580 on the English language part of the College Board Examination will take INGL 3103 - Intermediate English I and INGL 3104 - Intermediate English II. This sequence does not require the oral practice laboratory.

⁴⁰ It includes one hour of laboratory per week.

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CONT 3005	Introduction to the Elements of Accounting I	4
ESTA 3001	Business Statistics I	3
MERC 4216	Principles and Practices of Selling	3
ESPA 3215	Business Expression and Communication	3
HUMA XXXX ⁴¹	General Education course in Humanities	3
INCO 4008 ⁴²	Business Strategic Communication	2
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
CONT 3006	Introduction to the Elements of Accounting II	4
ECON 3021	Principles of Economics I	3
LEGA 4005	Legal Aspects in Business	3
MERC 4027	Publicity Advertising	3
ESTA 3002	Business Statistics II	3
INCO 4006 ³³	Business Report Writing	2
TOTAL		18

⁴¹ General Education courses will be selected as included from section General Education Program.

⁴² It includes one hour of laboratory per week.

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MERC 4217	Consumer Behavior	3
ECON 3022	Principles of Economics II	3
FINA 3107	Financial Markets and Institutions	3
MERC XXXX ⁴³	Guided elective in Marketing	3
HUMA XXXX ⁴⁴	General Education course in Humanities	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
ADMI 4007	Strategic Management	3
MERC 4007	Research in Marketing	3
FINA 3106 ⁴⁵	Financial Management	3
MERC XXXX ⁴⁶	Guided Elective in Marketing	3
	Free Elective	3
TOTAL		15

⁴³ Guided elective will be selected from departmental approved guided electives list.

⁴⁴ General Education courses will be selected as identified from section General Education Program.

⁴⁵ It includes one hour of laboratory per week.

⁴⁶ Guided elective will be selected from departmental approved guided list.

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MERC 4250	Strategic Marketing Management	3
ADMI 4017	Business Ethics and Social Responsibility	3
MERC 4129	Services Marketing	3
⁴⁷	General Education in Science	3
ADMI 4225	Principles of International Business	3
	Free Elective	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
MERC 4005	International Trade	3
ADMI 3100	New Business Development	3
³⁸	General Education in Science	3
MERC XXXX ³⁷	Guided Elective in Marketing	3
	Free Elective	3
TOTAL		15

Total credits: 129**GUIDED ELECTIVES IN MARKETING³⁷**

CODE	DESCRIPTION	CREDITS
MERC 4036	Public Relations	3
MERC 3215	E-Marketing	3
MERC 4130	Promotion Management	3
MERC 4026	Logistics of Physical Distribution	3
MERC 4215	Retail Management	3

The courses of Practice Internships (ADEM 4016, INTD 4995) can only be utilized as free electives and will never be considered a guided elective. In order to take course ADEM 4016 the student must have at least twelve (12) concentration credits approved.

⁴⁷ General Education courses will be selected as included from section General Education Program.

MINOR IN ACCOUNTING, FINANCE, MANAGEMENT AND MARKETING

The Business Administration minors are available to all University of Puerto Rico at Arecibo students. The minor in the field of Accounting, Management, Marketing and Finance pursuit to enrich, diversify and expand the academic preparation of students. To qualify for the Business Administration minors, the student should:

1. Be admitted in the University of Puerto Rico in Arecibo as regular student.
2. Be in fulfillment with the requirements of the student official program.
3. Be in fulfillment with the grade point average requirements of the Business Administration Program.
4. Request the Business Administration minor no more than two years before the student official program graduation date. The student can only request one minor.
5. Submit a request, in the Registrar's Office, to express the intention to complete the curricular sequence of the minor chosen on or before they achieve fifty percent (50%) of the credits required on the program they are admitted.

For the minor to be included in the students academic record, the student need to complete all the requirements of both the official program and the minor requirements in no more than the equivalent of 150% of the require time to complete the student's official program. To ensure academic progress, the student must comply with the following requirements:

1. The courses identify as requirement in the minor curricular sequence must be approved with a minimum grade of C.

MINOR IN ACCOUNTING

CODE	DESCRIPTION	CREDITS
CONT 3101	Philosophy, Theory and Problems of Accounting I	3
CONT 3102	Philosophy, Theory and Problems of Accounting II	3
CONT 4038	Federal Taxes	4
CONT 4039	Puerto Rico Income Taxes	4
CONT 3025	Cost Accounting	4
TOTAL		18

MINOR IN FINANCE

CODE	DESCRIPTION	CREDITS
BASE 2007	Financial Statements Analysis	3
FINA 3009	Risk Management and Insurance	3
FINA 4016	Introduction to Real Estate	3
FINA 4037	Investments Principles	3
FINA 4010 or 4057	Entrepreneurial Finance or Personal Finance	3
TOTAL		15

MINOR IN MANAGEMENT		
CODE	DESCRIPTION	CREDITS
GERE 4027	Principles of Supervision	3
REHU 4405	Management of Human Resources	3
REHU 4407	Compensation Systems	3
ADMI 4415	Leadership	3
REHU 4419	Labor Law and Jurisprudence	3
TOTAL		15

MINOR IN MARKETING		
CODE	DESCRIPTION	CREDITS
MERC 4005	International Trade	3
MERC 4007	Research in Marketing	3
MERC 4217	Consumer Behavior	3
MERC 4250	Strategic Marketing Management	3
MERC 4027,4216 OR 4129	Publicity Advertising, Principles and Practices of Selling or Services Marketing	3
TOTAL		15

FACULTY

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Pérez Riestra, Rosa N., Ph.D. *Professor*, Doctor of Practical Philosophy, Universidad Complutense, Madrid; Master of Business Administration, Universidad de Puerto Rico.

Quiñones Pérez, Juan A., M.P., *Assistant Professor*, Master of Planning, Universidad de Puerto Rico

Velázquez Vera, Luis, M.P.A, *Professor*, Master in Public Administration, Personnel Administration, Universidad de Puerto Rico.

LIST OF COURSES

ADEM

ADEM 4015: INTERSHIP IN BUSINESS ADMINISTRATION/ ACCOUNTING / FINANCE, four (4) credits, 215 hours of contact. Pre-requisite: 12 credits in Accounting/Finance.

It consists of a practical work center where the student has the opportunity to develop skills in one or more areas of accounting or finance. It is expected that student can expand the theoretical concepts that were acquired in the classroom. The course will allow students to have more elements of judgments to determine the particular area within the field of accounting or finance that want to develop their professional practice.

ADEM 4016: INTERSHIP IN BUSINESS ADMINISTRATION/ MANAGEMENT-MARKETING, four (4) credits, 215 hours of contact. Pre-requisite: 12 credits in Management/Marketing.

It consists of a practical work center where the student has the opportunity to develop skills in one or more areas of management or marketing. It is expected that student can expand the theoretical concepts that were acquired in the classroom. The course will allow students to have more elements of judgments to determine the particular area within the field of management or marketing, that want to develop their professional practice.

ADMI

ADMI 3007: INTRODUCTION TO COMPUTERIZED DATA PROCESSING, three (3) credits, four (4) contact hours per week, including one (1) of laboratory per week.

Microcomputers introduction course which provides basic computer knowledge. Topics such as what is a computer, its use and how it can help a manager in his/her professional efforts are presented. The components of a computer information system are studied. The integration and application of management information systems in a business environment will be studied. Through practice, students will acquire the experience on the use of microcomputers and programming packages on several applications such as word processing, electronic spreadsheets, graphics and database systems as a tool to solve business packages on several applications such as word processing, electronic spreadsheets, graphics and database systems as a tool to solve business problems.

ADMI 3100: New Business Development three (3) credits, three (3) contact hours per week.

Pre-requisite: ADMI 4005, MERC 3115, CONT 3005, FINA 3107. Introduction to the theory and practice of establishing a small business. Topics include, among others: how to start and develop a new business, acquiring a franchise or buying an existing one.

ADMI 4005: INTRODUCTION TO MANAGERIAL ACTIVITY, three (3) credits, three (3) contact hours per week.

Introduction to the most relevant management theories using an interdisciplinary approach. Study of the different managerial functions and responsibilities in contemporary business.

ADMI 4007: STRATEGIC MANAGEMENT, three (3) credits, three (3) contact hours per week. Pre-requisite: ADMI 4005, REHU 4425.

Introduction to a comprehensive, conceptual and analytical decision process to help the enterprise evaluate its current condition, analyze environmental forces, including the competition, and to translate that information into objectives and strategies that will allow the company to compete efficiently. Emphasis is on the responsibility

of management in the development of programs designed to keep business competitive in the long run.

ADMI 4017: BUSINESS ETHICS AND SOCIAL RESPONSIBILITY, three (3) credits, three (3) contact hours per week. Pre-requisite: ADMI 4005, REHU 4425. The general study of the responsibility of the company towards its stakeholders and society, taking in consideration the political, social, technological and economics variables. Basics concepts are introduced as a philosophical study of ethics, as well as business ethics and its application in business administration and in the actions and decisions of the members of the organization in the workplace.

ADMI 4225: PRINCIPLES OF INTERNATIONAL BUSINESS, three (3) contact hours per week. Pre-requisite: ADMI 4005, CONT 3005, MERC 3115, FINA 3107. Introduction to the international dimension of business. Emphasis is on the participants, theories and particularities of the international business.

ADMI 4415: LEADERSHIP three (3) contact hours per week. Pre-requisite: ADMI 4005. Introduction to theories, concepts and practices of leadership in three areas of action: the organization, the community and society. Promotes discussion of contextualization of leadership, exploring the skills and abilities that are expected of a leader with principles, vision and ability to stimulate collective energy. Emphasizes skills that promote student entrepreneurial potential

BASE

BASE 2007: FINANCIAL STATEMENT ANALYSIS, three (3) contact hours per week. Pre-requisite: CONT 3006. A course designed to develop the analytical ability in finance so that there is a better comprehension of the analysis made with financial information which banks and credits institutions need to evaluate. It includes asset performance, cash analysis, cost-profit-volume analysis, financial position, working capital, decrease of increase, of noncurrent assets investments, changes in financial position, and ratio analysis.

CONT

CONT 3005: INTRODUCTION TO THE ELEMENTS OF ACCOUNTING I, four (4) credits, four (4) contact hours per week. The course familiarizes the student with the nature, scope and objectives of accounting and how its development had been affected by the different sector of society. The theory and methodology of accounting is studied emphasizing in the recognition of income and expenses, and the statements used for the presentation of the financial information. The student relates with the uses and importance of accounting for the owners, management, creditors and general public, who had diverse interests in the financial information.

CONT 3006: INTRODUCTION TO THE ELEMENTS OF ACCOUNTING II, four (4) credits, four (4) contact hours per week. Pre-requisite: CONT 3005. A continuation of the study of the basic accounting principles, concepts and procedures of partnerships, and corporations. The study of the organization and administration of partnerships and corporations and their liquidation. Emphasizes the legal characteristics and their effect in capital and profit distribution. Bond issuance, financing and corporate investments. The financial statements are compared and analyzed. Manufacturing is discussed in general.

CONT 3025: COST ACCOUNTING, four (4) credits, four (4) contact hours per week. Pre-requisite: CONT 3006. Study of the principles of cost accounting for different costs and their functions in business enterprises decisions. Study of the different techniques for cost accounting applicable to the various forms of production. The various budget principles and methods to establish the cost basis are studied. The routine procedures to use in compiling data for costs are analyzed.

CONT 3101: PHILOSOPHY, THEORY AND PROBLEMS OF ACCOUNTING I, three (3) credits, three (3) contact hours per week. Prerequisite: CONT 3006. Study of the Generally Accepted Accounting Principles and their application to business transactions analysis, accounting records, worksheet adjustments and its preparation, and financial statements preparation.

CONT 3102: PHILOSOPHY, THEORY AND PROBLEMS OF ACCOUNTING II, three (3) credits, three (3) contact hours per week. Prerequisite: CONT 3101. Discussion of the rules issued by the governing bodies of the profession, the methods and procedures for the preparation, recording, analysis and disclosure of financial information. Study of transactions and events related to the measurement of intangible assets, liabilities, capital of the owners or shareholders and the cash flow statement.

CONT 3103: PHILOSOPHY, THEORY AND PROBLEMS OF ACCOUNTING III, three (3) credits, three (3) contact hours per week. Prerequisite: CONT 3102. Study of the Generally Accepted Accounting Principles and their application to revenue recognition transactions of Business enterprises and their presentation in the financial statements. Includes the topics of accounting for income taxes, accounting for pensions and other post-retirement benefits, accounting for leases, changes in accounting principles, and other disclosures in the financial statements. An analysis of cases and problems is made on these topics and the student knowledge on the statement of cash flows is extended.

CONT 3115: COMPUTARIZED ACCOUNTING, three (3) credits, four (4) contact hours per week, including one (1) laboratory hour. Pre-requisite: CONT 3103. Through this course the students develop the required skills to perform routine accounting procedures with computers, using accounting systems modules.

CONT 4010: INCOME TAX PARTNERSHIP AND CORPORATIONS OF PUERTO RICO, three (3) credits, three (3) contact hours per week. Prerequisite: CONT 4039. Principles and procedures related to the Puerto Rico tax aspects of partnerships and corporations will be discussed in depth. The basic concepts acquired in the Puerto Rico tax course will be used and expanded, enabling the student for the application of these concepts to the previously mentioned tax entities.

CONT 4016: RECENT DEVELOPMENTS IN ACCOUNTING, three (3) credits, three (3) contact hours per week. Prerequisite: CONT 4058, CONT 3103. Discussion of the analysis of postulates, currents and controversial issues in the field of accounting. Emphasis on the examination of generally accepted principles of accounting recently adopted by the profession as expressed in current statements and publications.

CONT 4017: AUDITING ACCOUNTS AND SYSTEMS, three (3) credits, four (4) contact hours per week, including one (1) laboratory hour per week. Pre-requisite: CONT 3103. The study of contemporary auditing practices and their application. It includes the purpose of an audit by a certified public accountant (CPA), the evaluation of the system of internal controls, generally accepted auditing standards, ethics of the profession, evidence, the use of statistical sampling and

the computer by the auditor.

CONT 4027: COST ANALYSIS AND CONTROL, three (3) credits, three (3) contact hours per week. Prerequisite: CONT 3025. Relationship between cost accounting and cost control. Estimated or predetermined costs, budgetary control and standard costs. Graphic presentation of cost data. Non-Manufacturing cost and differential cost analysis.

CONT 4029: INTERNATIONAL ACCOUNTING, three (3) credits, three (3) contact hours per week. Prerequisite: CONT 3103. The multinational dimensions of accounting with reference to transactions in foreign exchange market, taxes, auditing and financial reporting. Discussion of efforts toward armonization of accountings standards. Emphasis on critical aspect of accounting situations, organizational structures, ethics, investments and relevant economic environmental circumstances. Requires student participation in team work or individual project, and to present their findings in written and oral form. The use of the microcomputer is required.

CONT 4036: MANAGERIAL ACCOUNTING, four (4) credits, four (4) contact hours per week. Pre-requisite: CONT 3006. Introduction to the uses of accounting for internal managerial purposes, explanation of the interpretation and uses by management in the planning and controlling business activities. Although emphasis is given to the use of accounting data by management, its use by investors and potential investors is also explained whenever deemed appropriate. Emphasis will be given to the following matters: internal control and reports to management, price-level changes, sources and uses of funds, cost concepts and application, profit planning, cost volume profit relationship and standard and variable costs.

CONT 4038: FEDERAL TAXES, four (4) credits, four (4) contact hours per week. Pre-requisite: CONT 3006. An analysis of the federal income tax law. Study of the most important dispositions of the federal income tax laws and its stipulations in regards to individuals and partnerships. The impact of the law on the decision-making process. Various tax methods are compared. It includes inclusions and exclusions from gross income, permissible deductions, capital assets, retention in the origin, credits for taxes paid to other countries and the determination of the taxes to be paid.

CONT 4039: PUERTO RICO INCOME TAXES, four (4) credits, four (4) contact hours per week. Pre-requisite: CONT 3006. The course covers the Puerto Rico Income Tax Act and Regulations covering taxable income. It includes the following topics: inclusions and exclusions; allowable deductions; flexible depreciation, basis for determining gain or loss; capital gain and losses; credits; computation of surtax and normal tax as affecting individuals, partnership and corporations. It also covers practical problems and the preparation of returns.

CONT 4046: ACCOUNTING FOR NONPROFIT ORGANIZATIONS; three (3) credits, three (3) contact hours per week. Pre-requisite: CONT 3102. A comprehensive study of accounting principles and financial reports of government agencies, colleges and universities, hospitals and health services and nonprofit entities.

CONT 4050: PRINCIPLES OF FRAUD PREVENTION AND DETECTION, three (3) credits, three (3) contact hours per week. Pre-requisite: CONT 3102. Introduction to the principles of fraud prevention and detection. The purpose of this course is to understand the reason why people commit fraud. The course focuses on the basis elements, definitions and concepts.

The main types of occupational fraud, including misappropriation of assets in companies in its various forms, corruption along with fraud in the financial statements are defined and discussed. The process of investigation and resolution of possible fraud allegation are studied. The internal control systems the organizations can use to help them prevent and detect are also discussed. In addition, there is a discussion of cases and common fraud patterns.

CONT 4058: ADVANCED FINANCIAL ACCOUNTING, three (3) credits, four (4) contact hours per week, including one (1) laboratory hour per week. Prerequisite: CONT 3102. Study and discussion of advanced and complex financial accounting such as consolidated financial statements, foreign operations and other business structures.

ESTA

ESTA 3001: BUSINESS STATISTICS I, three (3) credits, three (3) contact hours per week. An introduction to the concepts of business statistics. The course includes topics such as frequency distributions, descriptive statistics, index numbers, probability and the concept of mathematical expectation. Emphasis is placed on problems involving business decision-making under conditions of risks. This course can be taught in both traditional and distance learning educational modalities.

ESTA 3002: BUSINESS STATISTICS II, three (3) credits, three (3) contact hours per week. Pre-requisite: ESTA 3001. A continuation of Business Statistics I. It discusses statistical sampling, testing of hypotheses, estimation, regression, analysis, simple and multiple correlation and other methods of statistical business forecasting.

FINA

FINA 3009: RISK MANAGEMENT AND INSURANCE, three (3) credits, three (3) contact hours per week. Advanced study of the field of management risks and insurance, specifically on the administration of risks as a management function that helps preserve the operational efficiency of organizations. It covers the nature, the purpose, and the process of management risks. Studies the various techniques that can be used in the treatment of risks. Also, it analyzes and evaluates the most appropriate techniques in decision making and in the design, implementation, evaluation and improvement of risk management programs.

FINA 3106: FINANCIAL MANAGEMENT, three (3) credits, four (4) contact hours per week, including one (1) hour of laboratory per week. Prerequisite: FINA 3107, CONT 3006. Introduction to financial management with emphasis on the efficient management of funds to maximize the value of the company. It discusses the different models used for the evaluation of investment projects. It explains the different techniques of short and long term financial planning. It studies the issues concerning the capital structures of the company and its importance in making financial and investment decisions. In the discussion of these issues the ethical principles that should characterize the profession will be considered.

FINA 3107: FINANCIAL MARKETS AND INSTITUTIONS, three (3) credits, three (3) contact hours per week. Prerequisite: CONT 3006. Studies of financial markets and performance of financial institutions. The course discusses the function of financial intermediation and regulatory structure of financial markets in Puerto Rico, the United States and abroad. It explains

the models and theories about the operation and behavior of financial markets and the effect of risk on these. We also study different strategies and mechanisms to manage financial and non-financial risks and its relationship with the financial instruments value. We analyze current situations and their impact on the financial system, considering the ethical aspects.

FINA 4005: LIFE HEALTH AND RETIREMENT INSURANCE, three (3) credits, three (3) hours of lecture per week. Insurance techniques as means of protecting the human being against economic loss due to mental, physical incapacity or age. Discussion of benefits as well as risk situations, rates and legal considerations.

FINA 4009: CREDIT AND COLLECTION, three (3) credits, three (3) hours of lecture per week. Pre-requisite: FINA 3107. The study of the nature and the role of credit, the management of credit, function of credit, credit investigation, analysis, control and the function of collection. It explains the place credit and collection occupies in modern business and its effect on consumerism. The fluctuations of business, commercial activities and other effect over the economy of the nation in general are studied.

FINA 4010: ENTREPRENEURIAL FINANCE, three (3) credits, three (3) hours of lecture per week. Prerequisite: FINA 3106, ADMI 3100. Basic course for students who wish to develop a business. The basic financial aspects required for the development and establishment of a business are studied. Emphasis is placed on the study of the process starting the business, management and financial planning of a business, economics concepts to be considered, short and long term funding and the financial mechanisms and the business expansion processes.

FINA 4016: INTRODUCTION TO REAL ESTATE, three (3) credits, three (3) contact hours per week. A basic course in the principles and practices of the real estate business and the socioeconomic forces that underlie it.

FINA 4020: INTERNATIONAL FINANCE, three (3) credits, three (3) contact hours per week. Prerequisite: FINA 3107. The study of international monetary relations with emphasis on international monetary theory and policy. Among the topics to be discussed are included: international currency markets, international banking, balance of payments adjustments, and the international monetary system.

FINA 4037: INVESTMENTS, three (3) credits, three (3) contact hours per week. Pre-requisite: FINA 4125. Analysis and interpretation of financial sources of information through the study and analysis of investment alternatives emphasizing risk and other factors. Characteristics of private and institutional investors and analysis of their role through modern investigative method are studied along with, stock market conditions, characteristics and functions.

FINA 4039: PUBLIC INCOME, three (3) credits, three lecture hours per week. Pre-requisites: FINA 3107, ECON 3021. Study of the function of assignment, distribution and stabilization of the public income in the modern state, and its effects in private enterprise: analysis of the public budget policies from the point of view of the revenues and expenditures; taxing theories, public expenditures, incidence and effect of budgetary measures; public debt and its effects in the decision-making process of the private enterprise.

FINA 4050: FINANCIAL MARKETS, three (3) credits, three (3) contact hours per week. Pre-requisites: FINA 3106, ECON 3021. This course analyzes the structure of financial markets and the application of the latest monetary and economic theories of financial markets. It includes, among others, the following topics: the role of theory and financial policy, implications of the market structure, the interrelation between real and financial variables in the economic activities and other related topics.

FINA 4057: PERSONAL FINANCE, three (3) credits, three (3) contact hours per week. A concise study of financial planning and management at a personal level.

FINA 4125: INTERMEDIATE FINANCIAL MANAGEMENT, three (3) credits, three (3) contact hours per week. Prerequisite: FINA 3106. Course designed to deepen the corporate financial management topics. We discuss and analyze the concepts, techniques and tools used by financial managers for efficient decision making in terms of investment and financing. Will pay special attention to the following topics: financial planning, capital budgeting, capital structure, leases, and dividend policy. The course is aimed at students of the concentration of finance for the purpose of providing them with the financial tools necessary for future decision making in the workplace.

GERE

GERE 4027: PRINCIPLES OF SUPERVISION, three (3) credits, three (3) contact hours per week. Prerequisite: REHU 4405. The study of the process of supervision emphasizing the knowledge, understanding and development of the necessary skills in order to become an efficient supervisor. The following topics are discussed: delegation, motivation, leadership, personnel development and personal relations. Also studied are: health and safety regulations (OSHA), the equal opportunity act and the role of the supervisor in dealing with union and non-union members.

GERP

GERP 2005: PRODUCTION MANAGEMENT, three (3) credits, three (3) lecture hours per week. Pre-requisite: REHU 4405, MECU 3031. The application of modern management methods in manufacturing enterprises is studied. Problems related to purchases, inventories, production and quality controls, price fixing, administration of salaries and incentives are discussed. The course also studies the establishment of production patterns, plan design and time and movement studies.

LEGA

LEGA 4005: Legal Aspects in Business, three (3) credits, three (3) contact hours per week. Pre-requisite: ADMI 4005. Introduction and analysis of the principles of law, legislations, doctrines and jurisprudence that regulate businesses and individuals. It focuses in the understanding of the functions of business with respect to the laws and regulations that apply to them, for decision making. It focuses on the study of real cases segments showing legal and ethical trends and their impact on businesses and individuals.

MERC

MERC 3115: PRINCIPLES OF MARKETING, three (3) credits, three (3) contact hours per week. Introduction to the study of the marketing process as a management function. Emphasis in the analysis, planning, implementation, organization and control of marketing programs.

MERC 3215: E-MARKETING, three (3) credits, three (3) contact hours per week. Pre-requisites: MERC 3115, ADMI 3007. The marketing strategies that arise when using information technology in innovative ways to provide value to customers are analyzed. Emphasis is placed on the application of electronic communication as the basis of a marketing plan with an electronic focus. The interaction of the communication and customer service through web pages, “one to one” communication, inputs of customer behavior using online data, inventory optimization by integrating systems as Customer Relationship Management (CRM) and Supply Chain Management (SCM) are studied. In addition, the impact of online social platforms as a mechanism for companies to connect with actual customers and prospects is discussed.

MERC 4005: INTERNATIONAL TRADE, three (3) credits, three (3) contact hours per week. Pre-requisites: MERC 4007. The course studies the problems that occur in the market through national barriers, for example the marketing problems that occur within a number of markets of different nations. The situation of domestic firms that export, like those companies that assemble or produce in foreign markets. This course also studies the necessary functions for the distribution of goods and services from the exporter to international organizations.

MERC 4007: MARKETING RESEARCH, three (3) credits, three (3) contact hours per week. Pre-requisites: MECU 3031, MERC 3115 and ESTA 3001. Study of the necessary functions for the gathering, classification, presentation and systematic analysis of relevant data in a precise and objective manner of problems related to the marketing of existing or new goods and services.

MERC 4026: LOGISTICS OF PHYSICAL DISTRIBUTION, three (3) credits, three (3) contact hours per week. Pre-requisite: MERC 3115, MECU 3032. Analysis of product distribution from an interdisciplinary point of view with a focus on marketing and operations. Design, development and operation of an integrated physical distribution system for effective consumer product delivery are emphasized.

MERC 4027: PUBLICITY ADVERTISING, three (3) credits, three (3) contact hours per week. Pre-requisite: MERC 3115. Analysis, design, implementation and control of advertising programs. Emphasis is on the design and evaluation of creative strategies.

MERC 4036: PUBLIC RELATIONS, three (3) credits, three (3) contact hours per week. Pre-requisite: MERC 3115. Presentation and study of public relations as a professional activity for the promotion of business. The identification of groups with possible relationship with business as well as the empirical determination for the public relations program, its development and evaluation and the use of appropriate means for obtaining an assuring a positive image of the company in the community of market it serves.

MERC 4129: SERVICES MARKETING, three (3) credits, three (3) contact hours per week. Pre-requisite: MERC 3115. Study of the marketing strategies used in the service industry. Analysis of how the distinctive characteristics of service industry affect the design and implementation of marketing strategies.

MERC 4130: PROMOTION MANAGEMENT, three (3) credits, three (3) contact hours per week. Pre-requisite: MERC 3115. Analysis, planning, implementation and control of promotions in the goods and services segments. Emphasis is placed in communication theories directed to persuade, and achieve changes in attitudes and perceptions. Other major topics include the use of other traditional promotion tools like advertising, personal selling and newer tools and advances used in this discipline.

MERC 4215: RETAIL SALES ADMINISTRATION, three (3) credits, four (4) contact hours per week. Pre-requisite: MERC 4217. Development and implantation of marketing strategies in the context of the retail business. Emphasis in the effective analysis of the environment in which the business competes and the marketing strategies that arise with the changes in this environment.

MERC 4216: PRINCIPLES AND PRACTICES OF SELLING, three (3) credits, three (3) lecture hours per week. Pre-requisite: MERC 3115. Study of theories and practices of personal sales at the management level. Emphasis in the study of the behavior of salesperson, the external factors which affects directly or indirectly the sales process and effective sales strategies. Introduction sales methods and techniques and verbal and non-verbal communication.

MERC 4217: CONSUMER BEHAVIOR, three (3) credits, three (3) contact hours per week. Pre-requisite: MERC 3115. Analysis of the prevalent theories of consumer behavior. Study methods to examine this behavior that will help in marketing decision making.

MERC 4250: STRATEGIC MARKETING MANAGEMENT, three (3) credits, three (3) contact hours per week. Pre-requisite: ADMI 4005, FINA 3106, MERC 3115. The course integrates and applies in an innovative and practical manner most of the marketing process knowhow, for the strategic achievement of organizational objectives. It focuses in value creation for customers, with the intent of establishing profitable and lasting relationships. Consideration is given to organizational structures, management of corporate resources capabilities; strategic positioning that will create, capture and sustain competitive advantages leading to organizational success. Other key strategic topics includes: market analysis, blending of marketing strategies, market segmentation, innovation, ethics and social responsibility in the business.

REHU

REHU 4405: MANAGEMENT OF HUMAN RESOURCES, three (3) credits, three (3) contact hours per week. Pre-requisites: ADMI 4005, REHU 4425. Introduction to strategies, practices, procedures and legal aspects related to the efficient utilization of human resources in organizations. Study of the theories, methods and techniques of human resources management's function within domestic and global economic context.

REHU 4406: LABOR RELATION, three (3) credits, three (3) contact hours per week. Pre-requisites: REHU 4405, REHU 4419. Analysis of the dynamics between labor unions and employers in organization in Puerto Rico and the United States, from their origins to the present. Emphasis on the study of the structures involved in labor relations, as well as the strategies used by each side in realizing their functions. Introduction with the basic processes of collective bargaining, the administration of agreements and its relationship with the non-union sector.

REHU 4407: COMPENSATION SYSTEMS, three (3) credits, three (3) contact hours per week. Pre-requisites: REHU 4405. Introduction to the design, implantation and administration of an efficient system of compensation. Emphasis on organizational diagnostics in terms of internal and external influences as preceding the design and administration of a compensation system.

REHU 4419: LABOR LAW AND JURISPRUDENCE, three (3) credits, three (3) contact hours per week. Analysis of labor and social legislation (federal and state) and how it affects business decisions. Study and analysis of the case law that has been decided by the Supreme and its impact in organizations. Highlights the importance of labor legislation, including protective labor legislation.

REHU 4425: HUMAN BEHAVIOR IN THE ORGANIZATION, three (3) credits, three (3) contact hours per week. This course includes the study of the concepts of individual and group behavior within an organization; topics includes motivation, psychological and material incentives, participation status and communication; also includes an analysis of the influence of behavioral sciences on personnel programs, and the formal and informal organization and training in human relations as well as the development of the skills required to understand, predict and influence the behavior of individuals in the organization.

REHU 4435: International Human Resources Management, three (3) credits, three (3) contact hours per week. Pre-requisite: REHU 4405. The study of human resources management and how this applies to different countries and continents around the world. The development of a global and integrated vision of the modern human resources professional.

REHU 4436: RECRUITMENT AND SELECTION OF EMPLOYEE, three (3) credits, three (3) contact hours per week. Pre-requisite: REHU 4405. Study of models and strategies for the recruitment and selection of internal and external employment candidates. Emphasis on the planning and implementation of effective strategies to identify short and long term recruitment needs and to select candidates with the required competencies to work in competitive organizations.

REHU 4437: TRAINING AND EMPLOYEE DEVELOPMENT, three (3) credits, three (3) contact hours per week. Pre-requisite: REHU 4405. Study of theories and strategies that contribute to the effective design, implementation and evaluation of training and development programs for employees in managerial and non-managerial positions. Emphasis on techniques that contribute to the attainment of individual and organizational goals that affect the management of talent, employee performance, productivity and satisfaction in competitive organizations.

BIOLOGY DEPARTMENT
BACHELOR OF SCIENCES
WITH MAJOR IN MICROBIOLOGY
(4506)

DEPARTMENT VISION

Develop a competent professional in the Biology field.

PROGRAM MISSION

Formation of a holistic human being; an educated citizen, conscious of its ethical, social, and cultural obligation. A professional with the knowledge, skills and necessary attitude to perform successfully in the microbiology field, in scientific research or any study area the student wishes to continue after finishing studies.

PROGRAM DESCRIPTION

The Bachelor of Sciences with major in Microbiology is centered in the study of single-cell organisms and colonies, the genetic sub-cellular components and its interactions with human beings and other lifeforms. Includes the teaching of microbial genetics, molecular biology, cellular physiology, virology, microbial pathogens, microbiology and environmental ecology, immunology, statistics, computing and related laboratory methods emphasizing in microscopy.

The program teaches and guides the student to perform in the work force, especially in technology industries, pharmaceuticals and food production laboratories. It also offers the student an undergraduate formation needed to continue academic and professional studies.

The program was revised in 2009. The new curricular sequence of the program allows the student to choose an area to be emphasized during their years of study. These areas are: medical microbiology, industrial and environmental microbiology. Once the students enter the program their area of emphasis is determined based on the assessed achievements of the student.

The program has been divided in emphasize areas with concentration electives that are in the current curriculum sequence. Thus, generally grouped courses offered by the Department of Biology for the student to be more focused on their academic work. The areas of emphasis are:

- Environmental Microbiology: Four courses for a total of 13 credits in which the student acquires additional knowledge about the importance of microorganisms in different ecosystems. This includes courses in ecology, mycology and environmental microbiology.
- Industrial Microbiology: Four courses for a total of 12 credits in which the student acquires additional knowledge about the importance of microorganisms in the industry, both as tools as well as possible contaminants. Includes courses in mycology, bacteriology, food microbiology and process validation.

- **Medical Microbiology:** Four courses for a total of 12 credits in which the student acquires additional knowledge about the importance of microorganisms in medicine. It includes courses in parasitology, virology, mycology and medical bacteriology.

PROGRAM GOALS

The bachelor's degree in Science with a major in Microbiology with its three content areas aspires to prepare students so they are able to:

1. Become an effective influence as members of the Puerto Rican society; a responsible citizen.
2. Be prepared and perform effectively in the microbiology field.
3. Apply the necessary skills to find the solution to problems in the microbiology field.
4. Have the required skills and necessary knowledge to continue studies in areas related to microbiology.

GRADUATE STUDENT PROFILE

1. Efficiently perform as professionals in the field of microbiology in scientific research as well as in quality control.
2. Learn and use the essential equipment in the field of microbiology.
3. Learn and use advanced technology in biotechnology.
4. Analyze scientific data and reach conclusions in order to make accurate decisions.
5. Apply microbiology processes for the solution of problems in short and long terms.
6. Learn and use emerging technology in the electronic communication areas.
7. Speak fluently, correctly and professionally, in English as in Spanish.
8. Continue graduate studies.

STUDENT DUTIES

1. Complete the proposed curricular sequence.
2. Comply with the Academic counseling process.
3. Have their lab coat and safety goggles to be used in the laboratory.
4. Maintain the dress code during the time spent in the laboratory, that is; lab coat and safety goggles, closed shoes and clothes covering the legs.
5. Be available to perform test readings or cultures outside of the regular class periods.
6. Be available to perform field trips outside of their regular class periods as required in the course.
7. Be available to take departmental exams at a time different from their class period.

JOB OPPORTUNITIES

- Graduate students from the program will be able to work in pharmaceutical industries, agencies related to the environment, food industries and in research and biotechnology. Other areas are biology scientist, management of natural sciences and in high school teaching.
- Once the studies are complete, the graduate student may continue graduate studies in professional or academic health related areas.

FIRST YEAR⁴⁸

First Semester		
CODE	DESCRIPTION	CREDITS
BIOL 3011	Modern Biology I	4
BIOL 3013	Modern Biology I Lab	0
QUIM 3131	General Chemistry I	3
QUIM 3133	General Chemistry I Lab	1
MATE 3171	Pre-Calculus I	3
ESPA 3101	Basic Spanish I	3
INGL 3101	Basic English I	3
INGL 3113	Basic English I Lab	0
TOTAL		17

Second Semester		
CODE	DESCRIPTION	CREDITS
BIOL 3012	Modern Biology II	4
<u>BIOL 3014</u>	Modern Biology II Lab	0
QUIM 3132	General Chemistry II	3
QUIM 3134	General Chemistry II Lab	1
MATE 3172	Pre-Calculus II	3
ESPA 3102	Basic Spanish II	3
INGL 3102	Basic English II	3
INGL 3114	Basic English II Lab	0
TOTAL		17

⁴⁸As revised in August 2009 students admitted to the program previous to this date will complete their bachelor's degree according to the valid curricular sequence used before August 2009.

SECOND YEAR**First Semester**

CODE	DESCRIPTION	CREDITS
BIOL 3731	General Microbiology	4
BIOL 3732	General Microbiology Lab	1
QUIM 3461	Organic Chemistry I	3
QUIM 3462	Organic Chemistry I Lab	1
CISO 3121	Introduction to Social Sciences I	3
MATE 3031	Calculus I	4
	TOTAL	16

Second Semester

CODE	DESCRIPTION	CREDITS
BIOL 4023	Fundamentals of Immunology	2
BIOL 4024	Fundamentals of Immunology Lab	1
QUIM 3463	Organic Chemistry II	3
QUIM 3464	Organic Chemistry II Lab	1
CISO 3122	Introduction to Social Sciences II	3
MATE 3026	Introduction to Computer Assisted Statistics	3
ELECTIVE		3
	TOTAL	16

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
1st Content Course Area		3
Industrial Microbiology		
BIOL 3917	Industrial Bacteriology	
BIOL 3918	Industrial Bacteriology Lab	
Environmental Microbiology		
BIOL 3115	General Ecology	4
BIOL 3116	General Ecology Lab	0
Medical Microbiology		
BIOL3745	Principles of Medical Mycology	
BIOL3746	Principles of Medical Mycology Lab	
BIOL 3919	Water Microbiology	3
BIOL 3920	Water Microbiology Lab	0
FISI 3011	University Physics I	3
FISI 3013	University Physics Lab I	1
HUMA 3101, 3102, 3201,3202	Western Culture	3
INGL 3221	Introduction to Literature I	
TOTAL		16-(17)

Second Semester		
CODE	DESCRIPTION	CREDITS
2nd Content Course Area		3
Industrial Microbiology		
BIOL 3919	Industrial Mycology	
BIOL 3920	Industrial Mycology Lab	
Environmental Microbiology		
BIOL 3929	Environmental Mycology	
Medical Microbiology		
BIOL 4426	General Parasitology	
BIOL 4427	General Parasitology Lab	
BIOL 3907	Molecular Biology	3
BIOL 3908	Molecular Biology Lab	0
FISI 3012	University Physics II	3
FISI 3014	University Physics II Lab	1
HUMA 3101, 3102,3201,3202	Western Culture	3
INGL 3222	Introduction to Literature II	
TOTAL		16

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
3rd Content Course Area		3
Industrial Microbiology		
BIOL 3926	Food Microbiology	
Environmental Microbiology		
BIOL 3747	Microbial Ecology	
BIOL 3748	Microbial Ecology Lab	
Medical Microbiology		
BIOL 4438	Virology	
BIOL 3905	Bacterial Genetics	3
ESPA 3211	Introduction to Spanish Literature I	3
BIOL 3910	Bioinformatics Seminar	1
ELECTIVES		6
		16
TOTAL		

Second Semester		
CODE	DESCRIPTION	CREDITS
4th Content Course Area		3
Industrial Microbiology		
BIOL 4020	Validation of Industrial Processes	
Environmental Microbiology		
BIOL 3733	Environmental Microbiology	
BIOL 3744	Environmental Microbiology Lab	
Medical Microbiology		
BIOL 4006	Medical Bacteriology	
BIOL 3207	Introduction to Biotechnology	3
BIOL 3909	Integrated Seminar: Scientific Research and Writing Investigation	1
ESPA 3212	Introduction to Spanish Literature II	3
ELECTIVES		3
		13
TOTAL		

FACULTY

Acevedo Santiago, Mari L., Ph.D. *Professor*, Doctor in Philosophy, Biochemistry, Molecular and Cell Biology, Pharmacology Minor, Cornell University.

Amador Beauchamp, Marilisa, M.S., *Professor*; Master of Science, Microbiology and Medical Zoology, University of Puerto Rico, Medical Sciences Campus.

Arbelo García, José G., M.S., *Professor*, Master of Science, Biology, Universidad de Puerto Rico; Doctoral courses in Environmental Microbiology, Universidad Complutense de Madrid, Spain.

Cardona Custodio, Cynthia, M.S., *Professor*, Master of Science, Biology, University of Puerto Rico, Río Piedras Campus.

Fernández Rodríguez, José R., M.S., J.D. *Professor*; Master of Science, Biology, University of Puerto Rico, Mayagüez Campus; Juris Doctor, Interamerican University of Puerto Rico, Metropolitan Campus.

Mercado Iguina, Edgardo, D.V.M., *Associate Professor*, Doctor of Veterinary Medicine, Tuskegee Institute, Alabama.

Pérez González, Juan, M.S., *Assistant Professor*, Master of Science, Biology, University of Puerto Rico, Mayagüez Campus.

Ramos Miele, Luis T., D.V.M., *Assistant Professor*, Doctor of Veterinary Medicine, Tuskegee Institute, Alabama.

Ramírez Silva, Juan, M.A., *Professor*, Master of Arts, Science Education, University of Puerto Rico, Mayagüez Campus.

Reyes Colón, Dalynés, Ph.D., *Assistant Professor*, Doctor of Philosophy, Anatomy, University of Puerto Rico, Medical Sciences Campus.

Reyes Medina, Sonia I., M.S., *Professor*, Master of Science, Biology, University of Puerto Rico, Río Piedras Campus.

Rivera Font, Nancy, M.S., *Assistant Professor*, Master of Science, Anatomy, University of Puerto Rico, Medical Sciences Campus.

Serrano Rivera, Servy A., M.S., *Professor*, Master of Science, Microbiology and Medical Zoology, University of Puerto Rico, Medical Sciences Campus.

Vega Castillo, Sondra I., Ph.D., *Assistant Professor*, Doctor of Philosophy, Biology, University of Puerto Rico, Río Piedras Campus.

LIST OF COURSES

BIOL

BIOL 2001: ELEMENTARY MICROBIOLOGY, four (4) credits, three (3) contact hours and three (3) hours of laboratory per week. A study of the microorganisms that affect man; concepts of asepsis, disinfection, and isolation; diagnosis and treatment of diseases. Course designed for students in the Associate Degree in Nursing.

BIOL 2002: MICROBIOLOGY LABORATORY, zero (0) credits, three (3) contact hours. Complements BIOL 2001.

BIOL 3008: BASIC TOPICS IN BIOLOGY, three (3) credits, three (3) contact hours. Includes the basic and modern concepts of cellular aspects, genetics, evolution and ecology; with emphasis given to the topics that benefit or affect human health. Designed specifically for nursing students.

BIOL 3011: MODERN BIOLOGY I, four (4) credits, three (3) contact hours. A study of the basic principles that govern organism as a whole living matter, chemistry, the cell, metabolism, photosynthesis, respiration, cell division, Mendelian and molecular genetics and evolution.

BIOL 3012: MODERN BIOLOGY II, four (4) credits, three (3) contact hour and three (3) hours laboratory per week. Pre-requisite: BIOL 3011. A study of the variety in the animal and plant kingdoms, their evolution, growth, nutrition, transportation, regulation and ecology.

BIOL 3013: MODERN BIOLOGY I LAB, zero (0) credits, three (3) contact hours. Complements BIOL 3011.

BIOL 3014: MODERN BIOLOGY II LAB, zero (0), three (3) contact hours. Complements BIOL 3012.

BIOL 3024: INTRODUCTION TO BIOCHEMISTRY, three (3) credits. Pre-requisites: BIOL 3011 and BIOL 3012. The study of biological processes based on the chemical reactions occurring in living systems. The student will understand the relationship between structure and function of the main biological molecules as well as the metabolic pathways that govern energy flow. The multidirectional focus on biological processes will help students gain an integral view of biology. The course is an elective for students in the Department of Biology.

BIOL 3108: UNDERGRADUATE RESEARCH, two (2) credits, six (6) contact hours. Pre-requisite: BIOL 3011 and BIOL 3012. Supervised research in the area of biological science, which provides the university student with the training and experience in the application of the scientific method and investigation.

BIOL 3115: GENERAL ECOLOGY, four (4) credits, three (3) lecture hours and three (3) hours of laboratory per week. Pre-requisite: BIOL 3011 and BIOL 3012. A study of the principles that rule the relationship between organisms and their environment, with emphasis placed on the ecological systems present in Puerto Rico and the degrading effects produced by pollution.

BIOL 3116: GENERAL ECOLOGY LABORATORY, zero (0) credits, three (3) contact hours. Complements BIOL 3115.

BIOL 3207: INTRODUCTION TO BIOTECHNOLOGY, two (2) credits, two (2) contact hours. Pre-requisite: BIOL 3011. Panoramic view of biotechnology, its history and development, as well as its impact on society. Study of the genetic basis of the function of living organisms and the technology that allows the development of new types of cells with the ability of manufacturing new commercially important products. Exploration of the various applications of biotechnology.

BIOL 3305: GENETICS, four (4) credits, three (3) contact hours. Pre-requisites: BIOL 3011 and BIOL 3012. A study of the fundamental principles of genetics using the concepts of molecular biology, identification, mechanism of action and transmittal of genetic material. The following topics are studied in detail: physical structure of a gene, concept of linkage and genetic control of metabolism and development.

BIOL 3306: GENETICS LABORATORY, zero (0) credits, three (3) contact hours. Complements BIOL 3305.

BIOL 3417: BIOLOGY OF PLANTS, four (4) credits, three (3) contact hour and three (3) hours of laboratory per week. Pre-requisite: BIOL 3011 and BIOL 3012. A study of the general concepts of the taxonomy, anatomy, physiology and the ecology of plants.

BIOL 3418: BIOLOGY OF PLANTS LAB, zero (0) credits, three (3) contact hours. Complements BIOL 3417.

BIOL 3425: BIOLOGY OF ANIMALS, four (4) credits, three (3) contact hours and three (3) hours of laboratory per week. Pre-requisite: BIOL 3011 and BIOL 3012. Biology of the different animal group with emphasis on their morphology, physiology, variety, reproduction, ecology, behavior, evolution and taxonomy.

BIOL 3426: BIOLOGY OF ANIMALS LAB, zero (0) credits, three (3) contact hours. Pre-requisite: BIOL 3011-3012. Complements BIOL 3420. A study of the preserved and live specimens of the different animal groups with emphasis given to the dissection and the study of their structures.

BIOL 3731: GENERAL MICROBIOLOGY, four (4) credits, four (4) contact hours per week. Pre-requisite: BIOL 3011 and BIOL 3012. Co-requisite: BIOL 3732 General Microbiology Laboratory. Through lectures, class discussions and demonstrations the student will explore the general characteristics of viruses, bacteria, fungi, algae, worms and protozoa with emphasis on morphological and physiological characteristics. Introduction to basic concepts related to microorganisms in the environmental, medical and industrial areas. The course is complemented with laboratory exercises. This course is for students in the B.S. in Microbiology at UPRA.

BIOL 3732: GENERAL MICROBIOLOGY LABORATORY, one (1) credit, three (3) contact hours per week. Co-requisite: BIOL 3731. Study of the morphology, physiology, taxonomy, ecology and control of most common microorganisms with emphasis on microbiological culture techniques.

BIOL 3733: ENVIRONMENTAL MICROBIOLOGY, three (3) credits, two (2) lecture hours and three (3) hours of laboratory per week. Pre-requisite: BIOL 3731-3732. Co-requisite: BIOL 3734. Through lectures, class discussions and demonstrations will study microorganisms within the context of their relationship and activity in the environment. The focus will be applications of microorganisms in the remediation of environmental systems. This course is for students in the B.S. in Microbiology at UPRA.

BIOL 3734: ENVIRONMENTAL MICROBIOLOGY LABORATORY, zero (0) credits, three (3) hours of laboratory per week. Laboratory designed to introduce students to the field of environmental microbiology. It emphasizes the study of microorganisms within the context of their relationship and activity in the environment. It will focus on basic techniques to identify microorganisms that contribute to the remediation of environmental systems. Complements BIOL 3733.

BIOL 3735: HUMAN PHYSIOLOGY, four (4) credits, three (3) contact hours and three (3) hours of laboratory per week. Pre-requisites: BIOL 3011 and BIOL 3012. Co-requisite: BIOL 3736. Introduction to the physiological study of human systems, with emphasis in homeostasis, transport, and neurophysiology, as well as muscular, endocrine, cardiovascular, respiratory, and renal physiology.

BIOL 3736: HUMAN PHYSIOLOGY LABORATORY, zero (0) credits, three (3) contact hours. Complements BIOL 3735.

BIOL 3741: HUMAN ANATOMY AND PHYSIOLOGY I, four (4) credits, three (3) contact hours and three (3) laboratory hours per week. Co-requisite: BIOL 3743. Introduction to the study of cellular morphology and physiology. Anatomical, histological and physiological study of the skeletal, muscular and nervous systems. This course is designed for students pursuing an A.D. in Nursing and Therapy.

BIOL 3742: HUMAN ANATOMY AND PHYSIOLOGY II, four (4) credits, three (3) contact hours and three (3) laboratory hours per week. Pre-requisite: BIOL 3741. Co-requisite: BIOL 3744. Histological, anatomical and physiological study of the digestive, respiratory, circulatory, endocrine and urogenital systems. Emphasizes the interrelationship of all systems in the coordination of the normal functioning of the body.

BIOL 3743: HUMAN ANATOMY AND PHYSIOLOGY I LABORATORY, zero (0) credits three (3) contact hours. Complements BIOL 3741.

BIOL 3744: HUMAN ANATOMY AND PHYSIOLOGY II LABORATORY, zero (0) credits, three (3) contact hours. Complements BIOL 3742.

BIOL 3745: PRINCIPLES OF MEDICAL MYCOLOGY, three (3) credits, two (2) contact hours and three (3) hours of laboratory per week. Pre-requisites: BIOL 3011, BIOL 3012, and BIOL 3731. Co-requisite: BIOL 3746. The study of the fungi that affect human beings. The basic techniques and concepts will initially be described gradually moving on to more advanced areas in medical mycology.

BIOL 3746: PRINCIPLES OF MEDICAL MYCOLOGY LABORATORY, zero (0) credits, three (3) contact hours. The student will become acquainted with the majority of fungi which are potentially pathogenic, and the processes and/or methods of producing diseases in man. The laboratory will offer the student the adequate mechanisms, so that he will be able to identify the majority of pathogenic fungi as well as those called “opportunistic”. Complements BIOL 3745.

BIOL 3747: MICROBIAL ECOLOGY; three (3) credits, two (2) contact hours per week and three (3) hours of laboratory. Prerequisites: BIOL 3731, BIOL 3732 and be enrolled in the Environmental Microbiology area of emphasis. Co-requisite: BIOL 3748: Microbial Ecology Laboratory. Through lectures, class discussions and demonstrations, the relationships between organisms and their biotic and abiotic environment will be studied. The role of microorganisms as essential agents to make the functioning of biogeochemical cycles and thereby make possible the orderly flow of materials and energy through the ecosystem is examined. The structure, physiology and diversity of microorganisms as the basis for the changes they generate is also discussed. A special emphasis will be given on microbial activity and their involvement in the balance in the local and global ecological processes. Course for students of the BS Program in Microbiology at UPR-Arecibo.

BIOL 3748: MICROBIAL ECOLOGY LABORATORY. ; zero (0) credits, three (3) contact hours per week. Prerequisite: BIOL 3731, BIOL3732 and be enrolled in the Environmental Microbiology area of emphasis. Co-requisite: BIOL 3747: Microbial Ecology Laboratory. Designed to introduce students to the field of microbial ecology and the role of microorganisms as agents essential for the functioning of the environment. It is emphasized on microbial activity as an agent for maintaining the balance in global and local ecological processes. Course for students of the BS Program in Microbiology at UPR-Arecibo.

BIOL 3791: HUMAN BIOLOGY III, three (4) credits, three (3) contact hours and three (3) hours of laboratory per week. Pre-requisite: BIOL 3011 and BIOL 3012. Co-requisite: BIOL 3793. The study of the structure and function of the cell. The four basic tissues of the skeletal, integumentary, muscular and nervous systems of the human body.

BIOL 3793: HUMAN BIOLOGY III LABORATORY, zero (0) credits, three (3) contact hours. Complements BIOL 3791

BIOL 3792: HUMAN BIOLOGY IV, three (4), three (3) contact hours, three (3) hours of laboratory per week. Pre-requisite: BIOL 3781. Co-requisite: BIOL 3794. The study of the structure and function of the circulatory, digestive, respiratory, urinary, endocrine, reproductive and immunological systems; aging and function of the human body.

BIOL 3794: HUMAN BIOLOGY IV LABORATORY, zero (0) credits, three (3) contact hours. Complements BIOL 3792.

BIOL 3905: BACTERIAL GENETICS, three (3) credits, three (3) hours lecture. Pre-requisite: BIOL 3731. The study of the basic principles of bacteria and virus genetics, the nature, organization and function of genetic material in bacteria and bacteriophage, the mechanism of genetic rearrangement and exchanges, and the genetic analysis of re-combination; the mutation and reparation process, manipulation of genetic material and recombinant DNA. The importance of the prokaryote genetics systems in the development of molecular genetics and biotechnology is emphasized.

BIOL 3907: MOLECULAR BIOLOGY, three (3) credits, three (3) hours of lecture. Pre-requisite: BIOL 3011 and BIOL 3012. Co-requisite BIOL 3908. Through lectures, class discussions and demonstrations the student will explore the fundamental principles of molecular biology. The structure, function and biosynthesis of key biological macromolecules and their interactions within the cell are discussed, interpreting the fundamental biological processes in terms of physical and chemical properties of these molecules. It especially emphasizes DNA and its role in genetic processes. The course is complemented by laboratory exercises. This course is for students in the B.S. in Microbiology at UPRA.

BIOL 3908: MOLECULAR BIOLOGY LABORATORY, zero (0) credit, three (3) hours of laboratory per week. Co-requisite BIOL 3907. Laboratory practice designed as an introduction to common molecular biology techniques. Emphasis is placed on nucleic acids and proteins, using basic expression, purification and analysis techniques. Complements BIOL 3907.

BIOL 3909: BIOLOGY SEMINAR, one (1) credit, one (1) contact hour. Seminar oriented towards the investigation of scientific literature. The student will research an assigned topic. Later the student will give a presentation and discuss it with classmates.

BIOL 3910: BIOINFORMATICS SEMINAR; one (1) credit, one (1) hour per week. Pre-requisite: BIOL 3907/BIOL 3908, QUIM 3461/QUIM 3462, MATE 3031 and MATE 3026. The basic principles of bioinformatics and the possible applications in the research of microbiology and related subjects are discussed through conferences, class discussions and the use of internet databases. Special emphasis is given to the specific terminology that characterizes this sub-discipline of Biology. Course for the students of the BS Program in Microbiology of the UPR at Arecibo.

BIOL 3915: INDUSTRIAL MICOLOGY, three (3) credits, two (2) hours of lecture and three (3) hours of laboratory per week. Pre-requisite: BIOL 3731. Co-requisite: BIOL 3916. The study of fungi with emphasis on their importance in industry. A discussion of fungi and their relations with the elaboration of food, agriculture, medicine; and as a source of food and their importance as a contaminating agent.

BIOL 3916: INDUSTRIAL MICOLOGY LABORATORY, zero (0) credits, three (3) contact hours. Complements BIOL 3915.

BIOL 3917: INDUSTRIAL BACTERIOLOGY, three (3) credits, two (2) hours of lecture and three (3) hours of laboratory per week. Pre-requisite: BIOL 3731. Co-requisite: BIOL 3918. The study of the principal bacteria related to water, milk and other food. A discussion of bacteriological control and analysis used, with emphasis on sterile areas. Includes methods of good manufacturing processes.

BIOL 3918: INDUSTRIAL BACTERIOLOGY LABORATORY, zero (0) credits, three (3) contact hours. Complements BIOL 3917.

BIOL 3919: WATER MICROBIOLOGY, three (3) credits, two (2) hours of lecture and three (3) hours of laboratory per week. Pre-requisite: BIOL 3731. Co-requisite: BIOL 3920. The basic concepts of microbiology and their application to water. Study of the principle groups of microorganisms related to the basic problems in managing bodies of water. Methods used in the control and microscopic analysis of water.

BIOL 3920: WATER MICROBIOLOGY LABORATORY, zero (0) credits, four (4) contact hours. Complements BIOL 3919.

BIOL 3927: CONCEPTS IN PHARMACEUTICAL BIOTECHNOLOGY, four (4) credits, three (3) contact hours. Co-requisite: BIOL 3928. Concepts in pharmaceutical biotechnology. Overview of industrial pharmaceutical biotechnology with emphasis on the construction, production, purification and analysis of pharmaceutical biotechnological products, including the study of those technologies that allow the development of new cells capable of making protein with clinical applications.

BIOL 3928: CONCEPTS IN PHARMACEUTICAL BIOTECHNOLOGY LABORATORY, zero (0) credits, three (3) contact hours. Laboratory practice focusing on the use of molecular biology concepts, as applied to biotechnology, emphasizing in the processes involved in the introduction of a transgene into a host cell with the final goal of expressing and purifying a recombinant protein. Complements BIOL 3927.

BIOL 3930: ENVIRONMENTAL ANALYSIS, three (3) credits, three (3) hours of lecture weekly. Pre-requisite. BIOL 3731 and BIOL 3732. Through lectures, class discussions and demonstrations students 'will explore the basic principles of environmental analysis. We will work with the indicators of water quality, air and soil. Special emphasis on the design of sampling plans that provides information on water quality, air or soil. Similarly will considered potential sources of pollutants and analysis techniques for them. The course is complemented by demonstrations and use of equipment to determine physical, chemical and biological quality of the environment. For students of BS in Microbiology Program of the UPR in Arecibo.

BIOL 3935: MOLECULAR BIOLOGY OF CANCER, two (2) credits, two (2) contact hours per week. Pre-requisite BIOL 3907. Molecular biology of cancer this course studies the basic principles of control of eukaryotic cell proliferation and the molecular mechanisms underlying the transformation of a normal cell into a malignant one. Emphasis is made on the components of the cell machinery that controls cell division and the processes that induce failure of regulatory mechanisms. The course provides an insight on how the knowledge of these molecular events is used in the development of new therapeutic strategies.

BIOL 4001: FUNDAMENTALS OF BIOLOGY, four (4) credits, four (4) contact hours and three (3) hours of laboratory per week. Co-requisite: BIOL 4002. The study of the basic principles and modern concepts of biology. An introduction to the study of cell morphology, physiology, division and metabolism. Emphasis is placed on the structure of living matter, the chemical composition, molecular aspects, the fermentation process, the basic aspects having to do with the origin and evolution of organism. Complemented by laboratory exercises and

demonstrations. Course designed for students in B.S. Program in chemical engineering technology; prepares the student for the course in industrial microbiology.

BIOL 4002: FUNDAMENTALS OF BIOLOGY LAB, zero (0) credits, three (3) hours of lecture per week. Complements BIOL 4001.

BIOL 4011: APPLIED INDUSTRIAL MICROBIOLOGY, four (4) credits, three (3) contact hours and three (3) hours of laboratory per week. Pre-requisite: BIOL 4001-4002. Co-requisite: BIOL 4012. The study of process involved in the cultivation and growth of microorganisms used in industry for the production of food, vitamins, antibiotics and chemical substances. Emphasis is placed on the basic concepts of morphology, nutrition and metabolic activities of yeast, fungi and bacteria.

BIOL 4012: APPLIED INDUSTRIAL MICROBIOLOGY Laboratory, zero (0) credits, three (3) contact hours. Complements BIOL 4011.

BIOL 4020: INDUSTRIAL PROCESSES VALIDATION, three (3) credits, three (3) contact hours per week. Pre-requisite: BIOL 3731/3732, BIOL 3917/3918, BIOL 3915/3916, BIOL 3926, and the student has to be accepted to the Industrial Microbiology emphasis area. The basic principles that guide the processes of Qualification, Certification and Validation that are applied to the drugs, food and cosmetic industries according to the Food and Drug Administration and the pharmacopeia of the United States, Europe, Japan and England (usually know for the initials USP, EP, JP and BP respectively) are studied through conferences, class discussions and demonstrations. It is aimed for the practical learning of the microbiologist in establishing and developing a written program that will later be put in effect through practical simulation of personal certification, equipment validation and the processes that are applied to the laboratories and manufacture of the industrial field. The management of bacteria and fungi tests under the parameters of regular requisites that are required in the pharmaceutical industry are studied and experimented. Course for the students of the BS Program in Microbiology of the UPR at Arecibo.

BIOL 4023: IMMUNOLOGY FUNDAMENTALS, two (2) credits, two (2) contact hours per week. Pre requisite: BIOL 3011 and BIOL 3012. Co-requisite: BIOL 4024. Through lectures, class discussions and demonstrations students will explore the basic principles of immunology and clinical applications. Special emphasis on the study of immune system function including cells, organs and antibodies. It also presents topics in histocompatibility systems, tumor immunology, autoimmunity and hypersensitivity. Will discuss the immunological aspects of some diseases in humans. The interaction between microorganisms that cause infectious diseases, the immune system and immunity will also be discuss. The course is complemented by laboratory exercises. This course is for students in the B.S. in Microbiology at UPRA.

BIOL 4024: IMMUNOLOGY FUNDAMENTALS LABORATORY, one (1) credit, three (3) contact hours per week. Laboratory where the students will apply the concepts learned in lecture. It will consider the study of organs and cells of the immune system, innate immune mechanisms, cell culture techniques and immunodiagnostic. Complements BIOL 4023.

BIOL 4055: ENVIRONMENTAL SCIENCE, three (3) credits, three (3) hours of lecture per week. Students will become familiar with the basic concepts of an ecosystem. They will be able to carry out a comparative study of a terrestrial and an aquatic ecosystem. They will also analyze

the problems of environment pollution and the control methods established by man, while having the opportunity of offering their own solutions to environmental problems.

BIOL 4347: EVOLUTION, four (4) credits, four (4) contact hours. Pre-requisite: BIOL 3305. The study of the processes and patterns of organic evolution with emphasis on the historical development of the evolutionary concept, the evidence sustaining the theory, the genetic structure of the population and the effect the evolutionary forces have on the genetic equilibrium of the population, the speciation mechanisms, the evolutionary history of different groups of organism and the evolution of behavior.

BIOL 4426: GENERAL PARASITOLOGY, three (3) credits, two (2) contact hours and three (3) hours of laboratory per week. Pre-requisite: BIOL 3011 and BIOL 3012. Co-requisite: BIOL 4427. A systematic study of the morphology, life cycle and epidemiology of the principal parasites with an emphasis on those that affect man.

BIOL 4427: GENERAL PARASITOLOGY LABORATORY, zero (0) credits and three (3) contact hours. Complements BIOL 4426.

BIOL 4438: Introduction to Virology; three (3) credits, three (3) hours per week. Pre-Requisite: BIOL 3731, BIOL 3732, BIOL 3907 and BIOL 3908. The basic principles of classification, structure, and physiology and biochemical activity of the viruses are studied through conferences, class discussions and demonstrations. The interactions between the viruses with different entities and the diseases they can cause are studied. Course for the students of the BS Program in Microbiology of the UPR at Arecibo.

BIOL 4555: HUMAN EMBRYOLOGY, two (2) credits and two (2) contact hours per week. Study of the human developmental mechanisms, including congenital malformations. The course will provide the student with an understanding of the prenatal period of human development, particularly between fertilization and the end of the embryonic stage. The course is oriented from a developmental perspective. The student will also learn about the major abnormalities that can occur during early human development, which can result in congenital malformations.

BIOL 4755: HISTOLOGY, three (3) credits, two (2) contact hours and three (3) hours of laboratory per week. Pre-requisites: BIOL 3011 and BIOL 3012. Co-requisite: BIOL 4756. Introduction to the microscopic study of the tissues and organs of superior animals with special emphasis on humans.

BIOL 4756: HISTOLOGY LABORATORY, zero (0) credits, three (3) contact hours per week. Complements BIOL 4455.

CIBI

CIBI 3001: FOUNDATIONS OF BIOLOGY I, three (3) credits, three (3) contact hours. The study of the fundamental biological concepts including the structure and chemical composition of living matter, the cell unite, cellular and genetic metabolism with emphasis on man. The class is conducted by means of lectures, discussions and demonstration. For students who are not in the department of natural sciences. **Not equivalent to BIOL 3011.**

CIBI 3002: FOUNDATIONS OF BIOLOGY II, three (3) credits, three (3) contact hours.
Pre-requisite: CIBI 3001. The study of the fundamental concept of biology. Includes the study of ecology, development, evolution, hormonal and nervous control, and other anatomical and physiological aspects of life, with emphasis on man. The course is given by means of lectures, discussions and demonstrations. For students that are not in the department of natural science. **Not equivalent to BIOL 3012.**

CIIN

CIIN 3001: INTEGRATED SCIENCE I, three (3) credits, three (3) contact hours per week.
Co-requisite: CIIN 3002. A study of the fundamental concepts of the biological and physical sciences needed for the teaching of modern science at an elementary level (K-6).

CIIN 3002: INTEGRATED SCIENCE I LABORATORY, one (1) credit, three (3) contact hours per week. This laboratory develops the basic skill in using lab equipment and materials related to elementary school earth and space sciences. Emphasis is given to the use of equipment and materials which are easily obtained and inexpensive. **Complements CIIN 3001.**

SOCIAL SCIENCES DEPARTMENT

BACHELOR OF SOCIAL SCIENCES WITH MAJOR IN IBEROAMERICAN STUDIES (1623)

The Bachelor of Social Sciences with major in Iberomeric Studies consists of 123 credits distributed as follows: 54 credits in General Education, 9 credits in departmental requirements, 33 concentration credits, 15 credits in guided electives and 12 electives.

Concentration courses have a multidisciplinary focus which includes economics, political science, sociology, anthropology, culture and geography. The section on guided electives allows students to choose courses that respond to their interests from a variety of courses while free electives allows students to select any course of their interest within the main course catalog. Curricular sequences are continuously revised. Students are encouraged to check with their departments to be informed of the latest revisions.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
SOCI 3245	Principles of Sociology	3
<u>ESPA 3101</u>	Basic Spanish I	3
<u>CISO 3071</u>	Introduction to Socio-Economics and Politics in Latin America I	3
<u>CISO 3316</u>	Literature of Latin American Society I	3
<u>HUMA</u>	Elective in Humanities	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
<u>CIPO 3011</u>	Principles of Political Science	3
<u>ESPA 3102</u>	Basic Spanish II	3
<u>CISO 3072</u>	Introduction to Socio-Economics and Politics in Latin America II	3
<u>CISO 3317</u>	Literature of Latin American Society I	3
HUMA	Elective in the Humanities	3
TOTAL		15

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ESPA	Elective in Spanish	3
INGL 3101	Basic English I	3
INGL 3113	Oral Practice Basic English I	0
CIPO 4105	Latin American Political Systems	3
MATE 3001	Introductory Mathematics	3
	Elective in Social Sciences	3
	TOTAL	15

Second Semester		
CODE	DESCRIPTION	CREDITS
ESPA	Elective in Spanish	3
INGL 3102	Basic English II	3
INGL 3114	Oral Practice Basic English II	0
<u>CIPO 4135</u>	Latin American Political Thought	3
<u>CISO 3155</u>	Fundamentals of Statistical Reasoning	3
	Elective in Social Sciences	3
	TOTAL	15

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
HIST 3241	History of Puerto Rico I	3
SOCI 3175	Sociology in Latin America	3
<u>CIBI 3001</u>	Foundations of Biology I	3
INGL	Elective in English	3
	Elective in Social Sciences	3
	TOTAL	15

Second Semester		
CODE	DESCRIPTION	CREDITS
HIST 3242	History of Puerto Rico II	3
<u>CIBI 3002</u>	Foundations of Biology II	3
INGL	Elective in English	3
<u>SOCI 4187</u>	Sociological Investigation Methodology	3
	Guided Elective *	3
	TOTAL	15

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
SOCI 3265	Social Research Techniques	3
GEOG 3225	Geography of Latin America	3
	Guided Electives	6
	Free Electives	6
	TOTAL	18

Second Semester		
CODE	DESCRIPTION	CREDITS
<u>ESIN 4011</u>	Latin American Studies Seminar	3
	Guided Electives	6
	Free Electives	6
	TOTAL	15

ELECTIVES IN THE SOCIAL SCIENCES

Students will take at least three (3) of the following courses and pass them with a minimum grade of C.

CODE	DESCRIPTION	CREDITS
<u>ECON 3005</u>	Introductory Economics I	3
<u>GEOG 3155</u>	Elements of Geography	3
<u>PSIC 3003</u>	Introduction to General	4
<u>ANTR 3006</u>	Psychology	3
	Sociocultural Anthropology	

**ELECTIVES IN SPANISH
(SECOND YEAR)**

Students will choose two (2) courses from among the following electives in Spanish, after consulting with their advisors.

CODE	DESCRIPTION	CREDITS
ESPA 3208	Writing and Style	3
ESPA 4221-4222	Spanish-American Literature I-II	6
ESPA 4231-4232	Puerto Rican Literature I-II	6
ESPA 4267	Puerto Rican Literature (Compendium)	3
ESPA 3211- 3212	Introduction to Spain Literature I-II	6

**ELECTIVES IN ENGLISH
(SECOND YEAR)**

Students will choose two (2) courses from among the following electives in English, after consulting with their advisors.

CODE	DESCRIPTION	CREDITS
INGL 3093	Conversational English	3
INGL 3094	Conversational English for Professionals	3
INGL 3201-3202	Grammar, Composition and Reading I-II	6
INGL 3221-3222	Introduction to Literature I-II	6
INGL 3238	Introduction Literary Creation	3

ELECTIVES IN HUMANITIES

Refer to the General Education courses in the Department of Humanities for more information.

GUIDED ELECTIVES

CODE	DESCRIPTION	CREDITS
<u>ANTR 3035</u>	Cultural Variety in the Caribbean	3
<u>ANTR 4025</u>	Society and Culture of Marginalized Communities	3
<u>ARTE 4282</u>	History of Latin American Art	3
<u>CIPO 3035</u>	Political System of Puerto Rico	3
<u>CIPO 4095</u>	Political System of the Caribbean	3
<u>CIPO 4115</u>	International Relations of Latin America and the Caribbean	3
<u>CIPO 4225</u>	Problems of Hispanic America	3
<u>CIPO 4325</u>	Marxist Thought	3
<u>CIPO 4475</u>	Latin America's Problem with Colonial Dependency	3
<u>CIPO 4585</u>	Social Changes and Political Development in Latin America	3
<u>CIPO 4655</u>	Political Sociology of Latin America	3
<u>CIPO 4665</u>	Seminar: Issues of Political Integration in Latin America	3
<u>CIPO 4715</u>	Nationalism, Colonialism and Imperialism	3
<u>CIPO 4725</u>	Seminar: Political Thought in the Caribbean	3
<u>CISO 3025</u>	Contemporary Peasant Movements in Latin America during 20th Century	3
<u>CISO 3061-3062</u>	Introduction to Socio-economics and Politics in the Caribbean I-II	6
<u>CISO 3186</u>	Society and Culture in Contemporary Caribbean	3
<u>CISO 4035</u>	Problems of Independence in the Contemporary Caribbean	3
<u>CISO 4075</u>	United States and the Caribbean	3
<u>CISO 4105</u>	Popular Movements in the Caribbean	3
<u>CISO 4115</u>	Problems and Perspectives of Latin America	3
<u>CISO 4155</u>	The Church as Socio-political Factor in Latin America	3
<u>CISO 4325</u>	Nationalism in Puerto Rico	3

CODE	DESCRIPTION	CREDITS
CISO 4337	Nationalism in Latin America and the Caribbean	3
CISO 4365	Issues of Latin American Development and Theories of National Development Seminar on Colonialism	3
CISO 4375	Seminar: Modern Imperialism	3
CISO 4505	Seminar and Trip Study through the Caribbean I-II	3
CISO 4521-4522	Economic Development	6
<u>ECON 4015</u>		
<u>ECON 4085</u>	International Economy	3
<u>ECON 4087</u>	International Business	3
<u>ECON 4095</u>	Evolution of Modern Capitalism	3
<u>ECON 4185</u>	Economic Problems and Tendencies in Latin America	3
<u>ECON 4215</u>	Economic Problems and Tendencies in the Caribbean	3
<u>ECON 4415</u>	Seminar: Restructuring the International Economy	3
<u>ESIN 4005</u>	Cultural Politics in the Caribbean	3
ESPA 3305	Spanish Movies and Literature	3
GEOG 3165	Geography of Puerto Rico	3
HIST 3101-3102	History of Mexico I-II	6
HIST 3145	General History of Spain	3
HIST 4165	History of Brazil	3
HIST 4215	History of Africa	3
HIST 4225	Theory of History	3
HIST 4355	Afro-Antillean Societies	3
HIST 4990	Introduction to Historical Study Trip Historical Study Trip	3
HIST 4995		3
PSIC 3055	Political Psychology	3
SOCI 1001	Sociological Principles of Environmental Education	3
SOCI 3095	Sociology of Work	3
SOCI 3355	Populations and Problems of Latin America	3
SOCI 4045	Race Relations in the Hispanic Caribbean: Cuba, Puerto Rico and Santo Domingo in the 19th century	3

**BACHELOR OF SOCIAL SCIENCES WITH MAJOR IN
INDUSTRIAL ORGANIZATION PSYCHOLOGY⁴⁹
(1624)**

The Bachelor of Social Sciences with major in Industrial Organizational Psychology consists of 124 credits distributed as follows: 54 credits in General Education, 9 credits in departmental requirements, 40 concentration credits, 9 credits in guided electives and 12 free electives.

This program offers a diversity of courses providing a multidisciplinary experience. Concentration courses have a multidisciplinary focus, which combines basic formation in psychology with industrial organization specialization while having the opportunity to choose other general courses within the fields of political science, sociology, anthropology, economics, and geography. The section on guided electives allows students to choose courses that respond to their interests from a variety of courses while free electives allows students to select any course of their interest within the main course catalog. Curricular sequences are continuously revised. Students are encouraged to check with their departments to be informed of the latest revisions.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
PSIC 3003	Introduction to General Psychology	4
SOCI 3245	Principles of Sociology	3
<u>ESPA 3101</u>	Basic Spanish I	3
<u>INGL 3101</u>	Basic English I	3
<u>INGL 3113</u>	Oral Practice Basic English I	0
<u>CIBI 3001</u>	Foundations to Biology I	3
TOTAL		16

Second Semester		
CODE	DESCRIPTION	CREDITS
PSIC 3046	History of Psychology	3
	Elective in Social Sciences	3
<u>ESPA 3102</u>	Basic Spanish II	3
<u>INGL 3102</u>	Basic English II	3
<u>INGL 3114</u>	Oral Practice Basic English II	0
<u>CIBI 3002</u>	Foundations to Biology II	3
TOTAL		15

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
PSIC 3116	Industrial Psychology	3
	Elective in Social Sciences	3
ESPA	Elective in Spanish	3
INGL	Elective in English	3
<u>MATE 3001</u>	Introductory Mathematics I	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
PSIC 3006	Social Psychology	3
	Elective in Social Sciences	3
ESPA	Elective in Spanish	3
INGL	Elective in English	3
<u>CISO 3155</u>	Fundamentals of Statistical Reasoning	3
TOTAL		15

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
<u>PSIC 3345</u>	Psychological Approach to Groups in a Labor Context	3
<u>PSIC 4025</u>	Physiological Psychology	2
<u>PSIC 4026</u>	Laboratory in Physiological Psychology	1
CISO 3156	The Use of the Computer in Research	3
<u>HIST 3241</u>	History of Puerto Rico I	3
HUMA	Elective in Humanities	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
<u>PSIC 3057</u>	Introduction to Test Construction	3
<u>PSIC 4036</u>	Introduction to Organizational Development	3
<u>ANTR 4035</u>	Anthropology of Health	3
<u>HIST 3242</u>	History of Puerto Rico II	3
<u>HUMA</u>	Elective in Humanities	3
	Free Elective	3
TOTAL		18

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
<u>PSIC 4017</u> ¹	Experiment and other Methods of Investigation	2
<u>PSIC 4018</u>	Lab. Experiment and other Methods of Investigation	1
<u>GTEC 4505</u>	In-Service Training Techniques	3
	Guided Electives	6
	Free Electives	3
	TOTAL	15

Second Semester		
CODE	DESCRIPTION	CREDITS
<u>PSIC 4211</u> ⁵⁰	Internship: Industrial Organizational Psychology I	3
<u>PSIC 3107</u>	Psychology, Ethics and Development Of Moral Judgments	3
	Guided Electives	3
	Free Electives	6
	TOTAL	15

Total credits 124

Note: None concentration course will not be approved with a grade lower than “C”.

¹ Pre-requisites for PSIC 4017 and PSIC 4018 include: PSIC 3003, CISO 3155 and CISO 3156

² Pre-requisites for PSIC 4211 include: PSIC 3003, PSIC 3116, PSIC 3345 and PSIC 3057

ELECTIVES IN SOCIAL SCIENCES

Students will take at least three (3) of the following courses and pass them with a grade of C or better.

CODE	DESCRIPTION	CREDITS
<u>ANTR 3006</u>	Sociocultural Anthropology	3
<u>CIPO 3011</u>	Principles of Political Sciences	3
<u>ECON 3005</u>	Introduction to Economics I	3
<u>GEOG 3155</u>	Elements of Geography	3

ELECTIVES IN SPANISH (SECOND YEAR)

CODE	DESCRIPTION	CREDITS
ESPA 3208	Writing and Style	3
ESPA 3211-3212	Introduction to Spanish Literature I-II	6
ESPA 4221-4222	Spanish-American Literature I-II	6
ESPA 4231-4232	Puerto Rican Literature I-II	6
ESPA 4267	Puerto Rican Literature (compendium)	3

ELECTIVES IN ENGLISH (SECOND YEAR)

CODE	DESCRIPTION	CREDITS
INGL 3093	Conversational English	3
INGL 3094	Conversational English for Professionals	3
INGL 3201-3202	Grammar, Composition and Reading I-II	6
INGL 3221-3222	Introduction Literature I-II	6
INGL 3238	Introductory Literary Creation	3

**ELECTIVES IN HUMANITIES
(FIRST YEAR)**

CODE	DESCRIPTION	CREDITS
HUMA 3101-3102	Western Culture I-II	6
HUMA 3201-3202	Western Culture III-IV	6
FILO 3001	Introduction Philosophy I	3
FILO 3005	Ethics Introduction	3
FILO 4006	Logic Fundamental	3
FRAN 3191-3192	Intensive French I-II	6

GUIDED ELECTIVES

CODE	DESCRIPTION	CREDITS
<u>ADMI 3005</u>	Administrative Theory	3
ANTR 3046	Human Evolution	3
<u>EDES 3006</u>	Diagnostic and Treatment of Reading and Writing Deficiencies	3
<u>EDES 4006</u>	Nature and Needs of Exceptional Students	3
<u>EDES 4049</u>	Characteristics and Needs of Children with Learning Disabilities	3
<u>EDFU 3007</u>	Social Foundations of Education	3
<u>EDFU 3017</u>	Evaluation of Learning Process	3
<u>EDPE 4265</u>	Teaching Oriented Towards the Development of Thought	3
<u>PSIC 3015</u>	Theories of Personality	3
PSIC 3016	Psychopathology	3
<u>PSIC 3025</u>	Human Development	3
<u>PSIC 3048</u>	Group Dynamics	3
PSIC 3055	Political Psychology	3
PSIC 3065	Psychology of Motivation	3
<u>PSIC 3088</u>	Psychological Analysis of Social and Cultural Changes in Puerto Rico	3
<u>PSIC 3346</u>	Strategies for the Development of High Learning Organizations	3
<u>PSIC 3347</u>	Strategies for Gathering Data for Organizational Decision-Making	3
<u>PSIC 3349</u>	The Psychology of Individual Differences and Its Application to Organizations	3
PSIC 4046	Training and Development in organizations	3
<u>PSIC 4047</u>	Consumer Psychology	3

CODE	DESCRIPTION	CREDITS
PSIC 4212	Internship: Industrial Organizational Psychology II	3
<u>PSIC 4215</u>	The Adult Employee and Retirement	3
<u>REHU 4405</u>	Administration of Human Resources	3
<u>REHU 4406</u>	Labor Management Relations	3
<u>REHU 4407</u>	Wage and Salary Administration	3
<u>REHU 4409</u>	Human Relations	3
<u>REHU 4426</u>	Collective Bargaining	3
SOCI 3095	Sociology of Work	3

FACULTY

Altagracia Espada, Carlos D., Ph.D., *Professor*, Doctor of Philosophy, History, University of Puerto Rico, Rio Piedras.

Andújar Rojas, Carlos A., Ph.D., *Professor*, Doctor of Philosophy, Industrial Organizational Psychology, University of Puerto Rico.

Entrialgo Granado, Karen, Ph.D., M.A., *Associate Professor*, Doctor of Philosophy, Clinical Psychology, University of Puerto Rico, Master of Philosophy Science, Université de la Sorbonne, France.

Fernández Sosa, Nilda C., Ph.D., *Professor*, Doctor of Philosophy, Industrial Organizational Psychology, University of Puerto Rico, Rio Piedras.

Figuroa Martell, Vangelo, M.A., *Professor*, Master of Arts, Criminal Justice, Inter-American University of Puerto Rico.

García Ochoa, Elba M., Ph.D., *Professor*, Doctor of Philosophy, Industrial Organizational Psychology, University of Puerto Rico, Rio Piedras.

Martínez Segarra, Eumardo L., Psy.D., *Professor*, Doctor of Psychology, Clinical Psychology, Centro Caribeño de Estudios Postgraduados, Puerto Rico.

Medina Santiago, Iván F., M.A., *Associate Professor*, Master of Arts, General Anthropology, Medical Anthropology, New School for Social Research, New York.

Mercado Nieves, Juan M., J.D., M.A., *Assistant Professor*. Juris Doctor, Inter-American University of Puerto Rico; Master of Arts, Latin American Studies, Politics of Development and History, Indiana University.

Morales Martínez, Rufino, Ph.D., *Professor*, Doctor of Philosophy, Clinical Psychology, Centro Caribeño de Estudios Postgraduados, Puerto Rico.

Narváez Marrero, Ramón A., M.P., *Professor*, Master of Arts, Social Planning, University of Puerto Rico, Rio Piedras.

Puig Hernández, Juan C., J.D., M.S., *Professor*, Juris Doctor, Universidad de Puerto Rico; Master of Sciences, Civil Engineering, University of Puerto Rico, Mayagüez.

Quiñones Domínguez, Martha G., Ph.D., *Professor*, Doctor of Philosophy, Economy, Universidad Complutense de Madrid, Spain; Master of Arts, Economy, University of Puerto Rico, Rio Piedras.

Ramírez Ortiz, Lourdes E., Ph.D., *Associate Professor*, Doctor of Philosophy, Industrial Organizational Psychology, University of Puerto Rico, Rio Piedras.

Rodríguez González, Inocencio, Ph.D., *Assistance Professor*, Doctor of Philosophy, Economy, West Virginia University, Morgantown; Master of Business Administration, Accounting, Metropolitan University of Puerto Rico, Cupey.

Rodríguez Rodríguez, Roberto, J.D., Ph.D., M.A., *Professor*, Juris Doctor, Inter-American University of Puerto Rico; Master of Arts, History of Puerto Rico and Caribbean, Centro de Estudios Avanzados de Puerto Rico y el Caribe; L.L.M.-Family Law, University of Barcelona, Spain.

Rodríguez Vázquez, José J., Ph.D., J.D., *Professor*, Doctor of Philosophy, History, University of Puerto Rico; Juris Doctor, Inter-American University of Puerto Rico, Rio Piedras.

Vilá González, Hilda M., Ph.D. *Associate Professor*. Doctor of Philosophy, Community Social Psychology, University of Puerto Rico, Rio Piedras.

LIST OF COURSES

ANTR

ANTR 3006: SOCIO-CULTURAL ANTHROPOLOGY, three (3) credits, three (3) lecture hours per week. Study of the subject. Study of the arguments on the nature of the subject. Systematic discussion of the anthropological concept of the culture and its relation to ideology, and also of the concepts of the modes of its production, social origins, relationship between production and social evolution. These concepts are discussed in the context of the stages of hunt-collection and the transition to a proprietary economy, from incipient to intensive production, the rise of the peasant and the development of the state.

ANTR 3046: HUMAN EVOLUTION, (3) credits, three (3) contact hours per week. The study of the origins, development, and variation of the human species in a biological context comparison of the fossil and molecular evidence to understand the first human societies. Discussion of the principal debates about human diversity.

ANTR 4035: MEDICAL ANTHROPOLOGY, three (3) credits, three (3) lecture hours per week. Comparative analysis of the cultural definitions of health and sickness. Discussion of the methodology of social-historical epidemiology, as well as of the diversity of ethno-medical systems. Also the study of the historical organization of medical systems, with emphasis on their power structure.

CIPO

CIPO 3011: PRINCIPLES AND PROBLEMS IN POLITICAL SCIENCES, three (3) credits, three (3) lecture hours per week. Pre-requisite: CISO 3122. Different visions of political life. Analysis of the processes and important institutions that take part in the collective decision-making of the political system. Application of the preceding to the particular case of Puerto Rico.

CIPO 3035: THE POLITICAL SYSTEM OF PUERTO RICO, three (3) credits, three (3) lecture hours per week. Historical and analytical study of the government of Puerto Rico since 1898 to the present. The political institutions developed during the period of American domination (1898-1952); the Constitutions of the Commonwealth of Puerto Rico, the Legislative, Executive and Judicial branches, municipal governments, and the relations between Puerto Rico and the USA.

CIPO 4095: CARIBBEAN POLITICAL SYSTEMS, three (3) credits, three (3) lecture hours per week. Development and constitutional, political and government practices in the Caribbean countries, including the Antilles, Mexico, Central America, Colombia and Venezuela.

CIPO 4105: LATIN AMERICAN POLITICAL SYSTEMS, three (3) credits, three (3) lecture hours per week. Pre-requisite: CIPO 3011. Study of the political systems of the principal Latin American countries. Social and historical backgrounds will be analyzed, as will relationship between the social and political systems in each case.

CIPO 4115: INTERNATIONAL RELATIONS OF LATIN AMERICA AND THE CARIBBEAN, three (3) credits, three (3) lecture hours per week. Pre-requisite: CIPO 3011 and the professor's permission. A study of the development and the current state of the relations between Latin American countries between themselves, with Anglo-America and the Caribbean.

CIPO 4135: LATIN AMERICAN POLITICAL THOUGHT, three (3) credits, three (3) lecture hours per week. Pre-requisite: CIPO 3011. The principal schools of political thought that dominated Latin America in the Twentieth Century. Analysis of representative authors on the Mexican Revolution, “aprimismo”, “peronismo”, contemporary movements such as the democratic left, “fidelismo” and communism the right wing oligarchy and the function of the military in politics.

CIPO 4225: PROBLEMS OF SPANISH AMERICA, three (3) credits, three (3) lecture hours per week. Pre-requisite: CIPO 3011. Critical analysis of the principal political, economic, social and cultural problems of developing countries, with special reference to Central America.

CIPO 4325: MARXIST THOUGHT, three (3) credits, three (3) lecture hours per week. Pre-requisite: CIPO 3011. Critical examination of some of the aspects of Marxist theory, specially the analysis of the works of Karl Marx.

CIPO 4475: THE PROBLEM OF COLONIAL DEPENDENCE IN LATIN AMERICA, three (3) credits, three (3) lecture hours per week. Pre-requisite: CIPO 3011. This course has three principal objectives: (1) all dependence theories will be analyzed and compared, studying, among other aspects dependence in contrast to classical colonialism and neo-colonialism, (2) the dimensions of this problems in Latin America. Economic, social and cultural aspects will be particularly examined, and (3) the student will be stimulated and guided to write a monograph in which all these aspects are researched in relation to the concrete experience of a particular Latin American society.

CIPO 4585: SOCIAL CHANGE AND POLITICAL DEVELOPMENT IN LATIN AMERICA, three (3) credits, three (3) lecture hours per week. Critical analysis of the theories of social change and political development. Emphasis will be given to those elements of social and political change which bear on the level of political participation. The applicability of these theories will then be studied and their usefulness as an analytical scheme to explain the peculiarities of the political evolution in different Latin American countries.

CIPO 4655: SOCIOLOGÍA POLÍTICA LATINOAMERICANA, (3) credits, three (3) contact hours per week. Description and analysis of main political phenomena present in contemporary Latin America.

CIPO 4665: LATIN AMERICAN POLITICAL SOCIOLOGY, three (3) credits, three (3) lecture hours per week. Pre-requisite: Only for senior students. Description and analysis of the political phenomena in Latin America; factors, problems and its viability. Integration and a socio-cultural, economic and political function.

CIPO 4715: NATIONALISM, COLONIALISM AND IMPERIALISM, three (3) credits, three (3) lecture hours per week. Pre-requisite: Having passed as least one other course in political sciences. The imperialist ideas, theories, experiences and behavior. The development of

the study of these phenomena, starting from traditional, historical and institutional political viewpoints, and the new contributions of psychology and political sociology.

CIPO 4725: SEMINAR: POLITICAL THOUGHT IN THE CARIBBEAN, three (3) credits, three (3) lecture hours per week. Pre-requisite: Department chair's permission. Critical and intensive analysis of some of the works of some of the principal exponents of political thought in the Caribbean area. (Each semester, the professor and his/her students will choose the authors they wish to study).

CISO

CISO 3025: CONTEMPORARY PEASANT MOVEMENTS IN LATIN AMERICA, three (3) credits, three (3) contact hours per week. Pre-requisite: CISO 3122. Study of contemporary mobilization peasant movements in Latin America: Brazil, Colombia and Mexico.

CISO 3061: INTRODUCTION TO THE SOCIO ECONOMIC AND POLITICAL DEVELOPMENT OF THE CARIBBEAN I, three (3) credits, three (3) contact hours per week. Analysis of the historical events that fostered the colonial economy and social structure of the Caribbean region. Included are the colonial state and emerging cultures until the imperialist expansion of 1898; the conquest and colonization of the Spanish area; Development of the slave economy in the English islands and the French Antilles; Haiti's independence; and the Hispanic-American-Cuban war.

CISO 3062: INTRODUCTION TO THE SOCIO ECONOMIC AND POLITICAL DEVELOPMENT OF THE CARIBBEAN II, three (3) credits, three (3) contact hours per week. Analysis of the imperialist expansion of 1898 in the Caribbean region, its effects on the socioeconomic structures, and its political and cultural expression until the crisis of 1930. The emergence and impact of nationalism, populism and Cuban socialism in the region.

CISO 3071: INTRODUCTION TO THE SOCIO ECONOMIC AND POLITICAL DEVELOPMENT OF LATIN AMERICA I, three (3) credits, three (3) contact hours per week. Study of the socioeconomic and political structures of the process of conquest and colonization and the study of the emergent culture. Secondly, the same analysis but from the wars of independence to the consolidation of the liberal state. Study of the socioeconomic and political structures of the process of conquest and colonization and the study of the emergent culture. Secondly, the same analysis but from the wars of independence to the consolidation of the liberal state.

CISO 3072: INTRODUCTION TO THE SOCIO ECONOMIC AND POLITICAL DEVELOPMENT OF LATIN AMERICA II, three (3) credits, three (3) contact hours per week. Study of the socioeconomic and political structures of the liberal state. The imperialist expansion from the emergence of monopolistic capitalism to the crisis of the 1930 decade; the emergence of populism and its exhaustion; the socialist and neo-fascist stages and the late process of democratization of the neo-fascist regimes.

CISO 3121: INTRODUCTION TO SOCIAL SCIENCES I, three (3) credits, three (3) contact hours per week. The scientific study of human interaction by examining the scientific method and its application to the study of human behavior. An examination of the social forces

which have shaped the world in which we live. The analysis of the individual as part of the social problem by studying the basic principles of sociology, anthropology and psychology. An analysis of the basic principles of the theory of personality and elements that affect its formation.

CISO 3122: INTRODUCTION TO SOCIAL SCIENCES II, three (3) credits, three (3) contact hours per week. The scientific study of human interaction by examining the scientific method. A study of the principle of social institutions with an emphasis on the family, problematic political situations and the economic powers that affect social life. Concepts in ecology, demography, and universal social processes will be studied.

CISO 3155: FUNDAMENTS OF STATISTICAL REASONING, three (3) credits, three (3) contact hours per week. The purpose of this course is to teach students the basic concepts in statistical reasoning, as well as the changes in the mechanics involved in the computation of basic statistical measurement as applied to the socio-psychological problems. Emphasis is placed on why and when to use specific measurements and the limitations this presents.

CISO 3156: COMPUTER ASSISTED RESEARCH IN THE SOCIAL SCIENCES, three (3) credits, three (3) contact hours per week. Introduction to and training in the methods and techniques of data processing using the principal statistics computer software available for research in the social sciences. Includes preparing, coding and processing programs oriented to statistics in the social sciences.

CISO 3186: SOCIETY AND CULTURE IN THE CARIBBEAN, three (3) credits, three (3) contact hours per week. Interdisciplinary study of the contemporary society and culture in the countries of the Caribbean Basin, with particular emphasis in the transformations that have taken place in the English and Spanish-speaking societies of the region.

CISO 3316: LITERATURE AND SOCIETY IN IBERO-AMERICA I, three (3) credits, three (3) contact hours per week. This course intends to examine the strategies of discourse with which literature has represented Ibero-American societies. This is a one-year course. Texts from the period of the Conquest to the end of the nineteenth century will be studied.

CISO 3317: LITERATURE AND SOCIETY IN IBERO-AMERICA II, three (3) credits, three (3) contact hours per week. This course intends to examine the strategies of discourse with which literature has represented Iberian-American societies. Texts from the last two decades of the 19th century to the beginnings of the 21st century will be studied.

CISO 4035: PROBLEMS OF INDEPENDENCE IN THE CONTEMPORARY CARIBBEAN, three (3) credits, three (3) contact hours per week. This course will study the problems of the independence phenomenon in the Caribbean. From the methods used in the anti-colonialist struggle from the times of the National Liberation War in the case of Haiti in the 19th century to the Cuban Revolution of the 20th century; the general characteristics of the new independent nations, specially English-speaking Caribbean, and the social, cultural, economic and political problems of these countries.

CISO 4075: THE UNITED STATES AND THE CARIBBEAN AREA, three (3) credits, three (3) contact hours per week. The first part of the course offers a historical outline of the diplomatic, historical and cultural relations of the United States with the countries of the Caribbean

Zone, including the Antilles, Central America, Colombia and Venezuela. This will be followed with the study of the contemporary relations and conditions.

CISO 4105: POPULAR MOVEMENTS IN THE CARIBBEAN, three (3) credits, three (3) contact hours per week. Pre-requisite: reserved for Senior students. Comparative analysis of four popular movements in the Caribbean: their historical roots, sociological composition, their economic demands, political organization and success.

CISO 4115: PROBLEMS AND PERSPECTIVES IN LATIN AMERICA, three (3) credits, three (3) contact hours per week. Basic social elements common to the national development of Latin American countries. Analysis of the problems of social stratification, political development and economic development, with emphasis on the period following the Independence Wars. Special attention will be given to aspects related to landholding, the distribution of income, accessibility to educational agencies, the military casters; revolution as an instrument for change or for resistance to change, and the social implications of urbanism and technological development. Intensive study of the impact these on four societies: Argentina, Mexico, Venezuela and Cuba.

CISO 4155: THE CHURCH AS A SOCIO-POLITICAL FACTOR IN LATIN AMERICA, three (3) credits, three (3) contact hours per week. Pre-requisite: previous consultation with academic advisor. Study of the social and political function of this institution in the stages of the development of Latin America from the independence period to the present.

CISO 4325: NATIONALISM IN PUERTO RICO, three (3) credits, three (3) contact hours per week. Analysis of the processes of formation of nationalist ideologies and movements in Puerto Rico.

CISO 4337: NATIONALISM IN LATIN AMERICA AND THE CARIBBEAN, three (3) credits, three (3) contact hours per week. Analysis of the processes of formation of nationalist ideologies and movements in Latin America and the Caribbean.

CISO 4365: PROBLEMS OF UNDERDEVELOPMENT IN LATIN AMERICA AND THE THEORIES OF NATIONAL DEVELOPMENT, three (3) credits, three (3) contact hours per week. An examination of the Latin American scientific thought regarding the problems of underdevelopment, the failure of the economic development theories, and the dependency theory or peripheral capitalism that dominates contemporary thought in the Latin American social sciences.

CISO 4375: SEMINAR ON COLONIALISM, three (3) credits, three (3) contact hours per week. Detailed analysis of the theoretical schemes of Fanon, Mannoni, Memni and Wallerstein on the effects of colonialism. Sociological study of literary works which describe the colonial society in selected societies. Operational de-colonization alternatives.

CISO 4505: SEMINAR: MODERN IMPERIALISM, three (3) credits, three (3) contact hours per week. The examination though selected readings and reports by the students of the various aspects and problems of the expansion beyond their national borders of the Western powers, starting at the resurgence of imperialism in the late XIX Century to the disintegration and transformation of the existing imperialist structures in the modern world. Greater emphasis will be given to the study of colonialism in the Latin American region.

CISO 4521: SEMINAR AND STUDY TOUR IN THE CARIBBEAN REGION I, three (3) credits, twenty (20) lecture hours and twenty-five (25) hours of laboratory. Pre-requisite: any course on the Caribbean. A comparative study of the social, economic and political problems of three Caribbean islands: one Dutch, one French and one Spanish-speaking.

CISO 4522: SEMINAR AND STUDY TOUR IN THE CARIBBEAN REGION II, three (3) credits, twenty (20) lecture hours and twenty-five (25) hours of laboratory. Pre-requisite: CISO 4521. Seminar and study tour to the selected communities analyzed in **CISO 4521**. The tour will take place during the summer.

ECON

ECON 3005. INTRODUCTION OF ECONOMICS, three (3) credits, three (3) contact hours per week. Introduction to the theory and application of the fundamental concepts of Economics: historical concepts and perspectives, fundamental problems, methods of analysis, fundamentals of microeconomy and contemporary and future economic problems.

ECON 3021. PRINCIPLES OF ECONOMICS MICROECONOMICS, three (3) credits, three (3) contact hours per week. Introduction to microeconomics emphasizing supply and demand, costs of production, and price and output determination under different market structures.

ECON 3022. PRINCIPLES OF ECONOMICS MACROECONOMICS, three (3) credits, three (3) contact hours per week. Introduction to macroeconomics, emphasizing social accounting, equilibrium, income and output determination, unemployment, inflation, the financial system, and economic policy.

ECON 4015. ECONOMIC DEVELOPMENT, three (3) credits, three (3) contact hours per week. Prerequisites: ECON 3021 and ECON 3022. A study of the common characteristics of underdeveloped countries, with emphasis on the economic theories explaining the factors that determine economic development; an examination of economic policies designed to foster development.

ECON 4085. INTERNATIONAL ECONOMICS, three (3) credits, three (3) contact hours per week. Prerequisites: ECON 3021 and ECON 3022. A study of the fundamental aspects of international economic theory; an examination of the current international economic framework and tendency towards economic integration; a brief analysis of the aspects and problems of the international monetary system.

ECON 4087. INTERNATIONAL BUSINESS, three (3) credits, three (3) contact hours per week. This course emphasizes on the theory of international commerce, including classic models regarding comparative as well as absolute advantages. It discusses the general equilibrium model and visionary structures such as imperfect competition among other concepts.

ECON 4095. EVOLUTION OF MODERN CAPITALISM, three (3) credits, three (3) contact hours per week. This course covers the history of capitalism from the industrial revolution until present. It emphasizes differences between the first and second half of the XIX century.

ECON 4185. ECONOMIC PROBLEMS OF LATIN AMERICA, three (3) credits, three (3) contact hours per week. Prerequisites: ECON 3021 and ECON 3022. Economic problems of Latin America; critical evaluation of the institutions and economic factors that retard or foster their solution; the role of the State in promoting economic development.

ECON 4215. ECONOMIC PROBLEMS AND TENDENCIES IN THE CARIBBEAN, three (3) credits, three (3) contact hours per week.

ECON 4415. SEMINAR: RESTRUCTURING THE INTERNATIONAL ECONOMY, three (3) credits, three (3) contact hours per week.

ESIN

ESIN 4005. CULTURAL POLITICS IN THE CARIBBEAN, three (3) credits, three (3) contact hours per week. This course studies the planning process of cultural politics within the Caribbean.

ESIN 4011. SEMINAR: LATIN AMERICAN STUDIES, three (3) credits, three (3) contact hours per week. This course studies the development of Latin American culture and all its aspects. It covers historical, literary, artistic as well as philosophical aspects. This course is essentially for research.

GEOG

GEOG 3155: ELEMENTS OF GEOGRAPHY, three (3) credits, three (3) lecture hours per week. Identification, analysis and systematization of the physical and cultural elements of the earthly space and how they exist interrelated and interconnected. The purpose of this course to create consciousness of the harmonious functioning of man and environment.

GEOG 3225: LATIN AMERICAN GEOGRAPHY, three (3) credits, three (3) lecture hours per week. Regional analysis of the geography of Latin America, with emphasis in the interpretation of the economic and cultural development of the different countries in the light of their physical conditions and natural resources.

HIST

HIST 3101. HISTORY OF MEXICO I, three (3) credits, three (3) lecture hours per week. History of Mexico from Pre-Colombian times to the present; the political, social, cultural, and economic development of the country.

HIST 3102. HISTORY OF MEXICO II, three (3) credits, three (3) lecture hours per week.

HIST 3145. GENERAL HISTORY OF SPAIN, three (3) credits, three (3) lecture hours per week.

HIST 4165. HISTORY OF BRAZIL, three (3) credits, three (3) lecture hours per week.

A historical survey of Brazil through the colonial and national periods, with special attention to economic, social and political development, cultural conflicts, and foreign relations.

HIST 4215. HISTORY OF AFRICA, three (3) credits, three (3) lecture hours per week.

HIST 4225. THEORY OF HISTORY, three (3) credits, three (3) lecture hours per week.

HIST 4355. AFRO-ANTILLEAN SOCIETIES, three (3) credits, three (3) lecture hours per week.

HIST 4990. INTROUCTION TO HISTORIAL STUDY TRIP, three (3) credits, three (3) lecture hours per week.

HIST 4995. HISTORIAL STUDY TRIP, three (3) credits, three (3) lecture hours per week.

PSIC

PSIC 3003: INTRODUCTION TO PSYCHOLOGY, four (4) credits, four (4) contact hours per week. This course covers numerous fundamental topics of psychology. It is directed to achieve the familiarization of the student with the content and nature of psychology as a science and as a profession, as well as with the scientific method as an instrument for the study of this science. It studies the diverse psychological problems that affect the individual and the different approaches and methodologies to solve them.

PSIC 3005: GENERAL PSYCHOLOGY, three (3) credits, three (3) contact hours per week. This course offers a sample of the basic topics in psychology. It intends to familiarize the student with the scientific method as an instrument for the study of this science. It studies some of the basic problems of the individual and society and the different approaches and methodologies to solve them.

PSIC 3006: SOCIAL PSYCHOLOGY, three (3) credits, three (3) contact hour per week. A psychological approach to social life from the point of view of the individual, the psychology of institutions and of social conflicts, and also a critical analysis of the relation between culture and personality.

PSIC 3015: THE DEVELOPMENT OF PERSONALITY: three (3) credits, three (3) contact hours per week. This course studies the process of development of personality and the diverse theories on this topic.

PSIC 3016: PSYCHOPATHOLOGY, three (3) credits, three hours of lecture per week. Psychological analysis of the dynamics, diagnosis and prognosis of individual and group abnormal behavior. It specifically analyzes major neuroses and psychoses, personality disorders such as sociopathies, drug and alcohol addiction, sexual deviations, etc.; and acute and chronic brain disorders. It presents a global vision of the various psychotherapies used for the treatment of abnormal behavior.

PSIC 3025: HUMAN DEVELOPMENT, three (3) credits, three (3) contact hours per week. The study of human development from infancy to adulthood, clarifying the importance of genetic or environmental factors in the evolutionary process. Describes the facts that characterize the physical, intellectual, moral and social aspects of each stage of development. The course expounds the better recognized theories interpreting human development.

PSIC 3046: HISTORY OF PSYCHOLOGY, three (3) credits, three (3) contact hours per week. A study of the development of psychology and the schools of thought that have contributed to it.

PSIC 3048: GROUP DYNAMICS, (3) credits, (3) contact hours per week. Pre-requisite: PSIC 3115, 3006 or permission. Study of the structure and functioning of groups, interaction within groups and leadership in groups. Special attention will be accorded to the most important theoretical and methodological contributions achieved in this field.

PSIC 3055: POLITICAL PSYCHOLOGY, three (3) credits, three (3) contact hours per week. This course focuses mainly on the psychological application to political phenomenon. This application is discussed from a global perspective in which the political as well as economic procedures are discussed.

PSIC 3057: INTRODUCTION TO THE CONSTRUCTION OF TESTS, three (3) credits, three (3) contact hours per week. This course covers the elementary principles of test construction. The following topics are included: analysis of placements, design of performance, (yield) theses, framing questions, analysis of questions, some concepts of trustworthiness and validity.

PSIC 3065: MOTIVATIONAL PSYCHOLOGY, three (3) credits, three (3) contact hours per week. The course will explore the nature and scope of research in several of the most important areas in the study of human motivation, emphasizing the problems and controversial points involved in the structure of a theory of motivation. Research papers chosen for this purpose, will be discussed and evaluated.

PSIC 3088: PSYCHOLOGICAL ANALYSIS OF THE SOCIAL AND CULTURAL CHANGES IN PUERTO RICO, three (3) credits, three (3) contact hours per week. Examination of the socio-cultural changes in Puerto Rican medium seen from the viewpoint of psychology. The basic interaction processes involved will be considered, relating them with learning, motivation and social perception, highlighting values, attitudes, expectations and the role of communication in social change.

PSIC 3107: PSYCHOLOGY, ETHICS AND THE DEVELOPMENT OF MORAL JUDGMENTS, three (3) credits, three (3) contact hours per week. Pre-requisite: PSIC 3115. Psychological and moral aspects, and ethical behavior are studied. The following topics are discussed: congruencies between judgments and actions, cognitive development and the concept of the law, respect, honor and authority.

PSIC 3116: INDUSTRIAL PSYCHOLOGY, three (3) credits, three (3) contact hours per week. Study of psychological techniques and their application in the industrial and business fields. Among other topics, procedures for promotion, promotions and selection of employees are studied. Study of the psychological factors which contribute to efficiency in an industrial commercial organization.

PSIC 3345: PSYCHOLOGICAL APPROACH TO GROUPS IN A LABOR CONTEXT, three (3) credits, three (3) contact hours per week. Presents the theories and models of group dynamics in organizations. Discusses the different types of groups and their use. Detailed analysis of group psychology and its implications for team work.

PSIC 3346: STRATEGIES FOR THE DEVELOPMENT FOR HIGHER LEARNING ORGANIZATIONS, three (3) credits, three (3) contact hours per week. Discusses the principal theories of organizational learning. Presents models for learning at the individual and organizational level. Analyzes the different methodologies and ways of generating learning within organizations.

PSIC 3347: STRATEGIES FOR GATHERING INFORMATION FOR DECISION-MAKING, three (3) credits, three (3) contact hours per week. Presents the techniques used more often in organizations to gather data for decision-making. Qualitative and quantitative techniques are studied. Skills in presentation and divulging information are practiced. Problem solving and decision-making processes area analyzed. Students will be provided with the opportunity to practice the data gathering skills during class exercises and a supervised external experience in a work setting chosen by students.

PSIC 3349: THE PSYCHOLOGY OF INDIVIDUAL DIFFERENCES AND ITS APPLICATION TO ORGANIZATIONS, three (3) credits, three (3) contact hours per week. Discusses how the psychology of individual differences affects organizational practices and dynamics. Aspects such as personality, stress, anxiety, depression and interpersonal relations affect the mood and culture of an organization. Presents aspects of cultural diversity and its relations to organizational practices in the world context.

PSIC 4017: THE EXPERIMENT AND OTHER METHODS OF PSYCHOLOGICAL RESEARCH, three (3) credits, three (3) contact hours per week. Pre-requisites: PSIC 3003, PSIC 3116, CISO 3155, PSIC 3057. Introduction to the scientific study of behavior with special emphasis in the laboratory methods, the design of the experiment and the gathering and analysis of data. Lectures will highlight the result of scientific studies and their theoretical interpretation with special attention to findings of recent studies in the field of psychology.

PSIC 4018: EXPERIMENTAL PSYCHOLOGY LABORATORY, one (1) credit, two (2) hours lecture per week. Co-requisite: PYSC 4017. The student shall do laboratory work representative of problems in areas such as learning, forming concepts, emotions and social interaction.

PSIC 4025: PHYSIOLOGICAL PSYCHOLOGY, three (3) credits, three (3) contact hours per week. Pre-requisite: PSIC 3003, CIBI 3002. Introduction to the physiological foundation for human behavior, the structure and functioning of the nervous system and its relation to the

psychological phenomena of sensation, perception, learning, thought motivation and emotions. Special attention is given to autonomic and cortical, and to the basis for movement.

PSIC 4026: PHYSIOLOGICAL PSYCHOLOGY LABORATORY, one (1) credits, two (2) lecture hours per week. Pre-requisite: PSIC 3003, CIBI 3002. Includes experiments and demonstrations that show the relation between physiological and the behavior exhibited.

PSIC 4036: ORGANIZATIONAL DEVELOPMENT, three (3) credits, three (3) contact hours per week. The most used strategies of diagnostic and organizational change in the field of organizational development. Emphasis is made on the models and theories of planned change and the evaluation of organizational interventions.

PSIC 4046: TRAINING AND DEVELOPMENT IN ORGANIZATIONS, three (3) credits, three (3) contact hours per week. The study of concepts, theories, methods and strategies for the integral human resources development as a function of the individual and organizational needs and expectations. This course provides comprehensive coverage of such topics as the role of training in organizations.

PSIC 4047: PSYCHOLOGY OF THE CONSUMER, three (3) credits, three (3) contact hours per week. Pre-requisite: PSIC 4009. Begins the study of the psychology of the consumer as is applicable in Puerto Rico. The following areas are examined among others: models of consumer behavior, the needs of the consumer, protection of the consumer, TV ratings, industrial promotion and evaluation of the promotion.

PSIC 4211: INTERNSHIP IN INDUSTRIAL ORGANIZATIONAL PSYCHOLOGY SEMINAR I, three (3) credits, three (3) contact hours per week and 120 hours of practice in the workplace. Pre-requisites: PSIC 3003, PSIC 3116, PSIC 3057, PSIC 3345. The student will apply in his practice the knowledge and skills learned in the specialization courses; will participate in industrial organizational psychology activities in the areas of recruitment, selection, evaluation, training, motivation, team work, conflict management, decision-making, problem solving and research.

PSIC 4212: INTERNSHIP IN INDUSTRIAL ORGANIZATIONAL PSYCHOLOGY SEMINAR II, three (3) contact hours per week and 120 hours of practice in the workplace. Pre-requisite: PSIC 4211, PSIC 4036. The student will apply in his practice the knowledge and skills learned in the specialization courses; will participate in industrial organizational psychology activities in the areas of recruitment, selection, evaluation, training, motivation, team work, conflict management, decision-making, problem solving and research.

PSIC 4215: THE ADULT EMPLOYEE AND RETIREMENT, three (3) credits, three (3) contact hours per week. Presents the theories of the development of adults and their learning. Makes an analysis of the myths and beliefs on old persons. Discusses the implications of retirement or job-termination in the adult person. The most up to date research in the field of aging and labor productivity.

SOCI

SOCI 1001: SOCIAL FOUNDATIONS IN ENVIRONMENTAL EDUCATION, (3) credits, three (3) contact hours per week. Integrated course on the fundamental principles of Social Science and their application to environmental social and natural problems. An inclusion is made to the legal aspects of environmental protection.

SOCI 3095: SOCIOLOGY OF WORK, (3) cred its, three (3) contact hours per week. This course focuses mainly on models related to division of work. It also covers topics such as Fordism in which analyses the effects of division of work within social groups.

SOCI 3175: LATIN AMERICAN SOCIOLOGY, (3) credits, (3) hours per week. The main Latin American schools of thought from yesterday and the present are studied as well as the phenomena, objectives and types of society and culture evident in Latin America, considered the hypothesis of a homogeneous area.

SOCI 3245: PRINCIPIES IN SOCIOLOGY, (3) credits, three (3) contact hours per week. Fundamental concepts in sociology; society; social action, human nature, communication, interaction, competency, conflict, adaptation and assimilation, groups, social rules, status, and change. A general examination which provides the student with the tools needed to interpret correct concrete situations, will create the foundations for scientific preparation post social sciences.

SOCI 3355: LATIN AMERICAN POPULATION AND PROBLEMS, (3) credits, three (3) contact hours per week. Analysis of the social institutions in Latin America. What is Latin America? Ethnology and demography. Family, education, government system and the military. Unification of the Law System. Cultural and economic integration. Religion and society in Latin America. Common and different interests. The interamericanism.

SOCI 4045: CARIBBEAN HISPANIC RACIAL AND CULTURAL RELATIONS, (3) credits, three (3) contact hours per week. Slavery and racial relations in these three Caribbean Hispanic societies are present in a comparative study which tries to isolate the factors which may explain the differences and parallelisms in these three countries. The fact that the Dominican Republic abolished slavery earlier than any of the other two societies, while the sugar cane economy began to develop much later in that country, makes this study able to propose a link between slavery and racial relations and the link between the sugar cane rush and racial relations.

SOCI 4187: SOCIOLOGICAL RESEARCH METHODOLOGY, (3) credits, three (3) contact hours per week. Study of the different paradigms which constitutes scientific practice. An examination of the approaches made in the construction of the study object, its historical-social specifics and the obstacles and epistemological breakings this study confronts.

COMPUTER SCIENCE DEPARTMENT

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

(1224)

The curriculum of the Bachelor of Science in Computer Science provides a solid base in the study of Computer Science, with a background in mathematics, natural sciences, social sciences, and the humanities. The program includes theoretical and practical aspects of computing and the necessary fundamentals to perform in a technologically advanced society. Graduates of the program can work in system programming, maintenance of operating systems, database design and management, software engineering, and validating and testing information systems. They will also have the basic knowledge to become supervisors of computer centers, software designers or researchers in computer science topics. In addition, the curriculum provides a solid base in science and mathematics to enable graduates to pursue graduate studies. Our department also offers a minor in web development.

Since 2009 the program has been accredited by the computing accreditation commission of ABET.

VISION

To provide a high-quality program that will enjoy prestige in industry, government and universities that offer graduate programs in computer science or related areas.

MISION

To develop a quality curriculum that allows the well-rounded formation of professionals in the field of Computer Science. Furthermore, we strive to integrate various fields of knowledge and develop new knowledge to prepare cultured and sensible citizens that contribute to the advancement of computing, the exchange of ideas and the social and cultural development of their environment.

PROGRAM GOALS

In order to fulfill its mission, the Program strives to:

- Provide a curriculum with a solid base in the study of computer science, with a background in natural sciences, social sciences, and humanities
- Maintain academic excellence through the professional development of the faculty
- Encourage research, creativity and dissemination among faculty and students
- Promote critical thinking and the ability and need for continuous professional improvement
- Develop in students the ability for continuous learning, a sense of responsibility with their own growth, a commitment to ethics and the awareness of their potential as a member of society who is able to contribute to its progress
- Maintain a continuous assessment process of our academic offerings to ensure that they respond to the needs of society and of our students

EDUCATIONAL OBJECTIVES

Within a few years of graduation, the graduates of the program are expected to:

1. Work and contribute to society in the discipline or related areas.
2. Be admitted to a graduate program in the discipline or related areas.
3. Perform the work with a high level of ethics, responsibility, and professionalism.
4. Stay up to date in the discipline through graduate studies, workshops, research, and professional certifications, among others.

STUDENT OUTCOMES

Graduates of the program will have an ability to:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.

CURRICULAR SEQUENCE 2015

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CCOM 3001	Computer Programming I	5
CCOM 3015	Computers in Society	3
MATE 3171 ⁵¹	Pre-Calculus	3
CIBI 3001	Introduction to Biological Sciences I	3
INGL 3101 ⁵²	Basic English I	3
INGL 3113	Basic English Oral Practice I	0
TOTAL		17

Second Semester		
CODE	DESCRIPTION	CREDITS
CCOM 3002	Computer Programming II	5
CCOM ----	Intermediate Departmental Elective	3
MATE 3172	Pre-Calculus II	3
CIBI 3002	Introduction to Biological Sciences II	3
INGL 3102	Basic English II	3
INGL 3114	Basic English Oral Practice II	0
TOTAL		17

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CCOM 3020	Discrete Mathematics	3
CCOM 3025	Introduction to Computer Systems	3
CCOM 4005	Data Structure and Algorithmic Analysis	3
MATE 3031	Calculus I	4
ESPA 3101 ⁵³	Basic Spanish I	3
TOTAL		16

⁵¹ This course has prerequisite score above 650 on the Math part of the College Board Examination or MATE 0008

⁵² Students who score above 580 on the English language part of the College Board Examination will take INGL 3103 - Intermediate English I and INGL 3104 - Intermediate English II, and those courses do not require take lab courses

⁵³ This course has prerequisite score above 470 on the Spanish part of the College Board Examination or ESPA 0060

Second Semester

CODE	DESCRIPTION	CREDITS
CCOM 3035	Computer Organization	3
CCOM 4006	Design and Analysis of Algorithms	3
MATE 3032	Calculus II	4
MATE 3026	Introduction to Computer Statistics	3
ESPA 3102	Basic Spanish II	3
TOTAL		16

THIRD YEAR

First Semester

CODE	DESCRIPTION	CREDITS
CCOM 3041	Operating Systems	3
CCOM 4025	Organization of Computer Programming Languages	3
FISI 3011	University Physics I	3
FISI 3013	University Physics Lab. I	1
ESPA 3208	Writing and Style	3
XXXX ----	General Elective	3
TOTAL		16

Second Semester

CODE	DESCRIPTION	CREDITS
CCOM 4115	Database Design	3
CCOM ----	Intermediate Departmental Elective	3
MATE 4031	Linear Algebra	3
FISI 3012	University Physics II	3
FISI 3014	University Physics Lab. II	1
INGL 3015	English for Science and Technology	3
TOTAL		16

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CCOM 4075	Software Engineering	3
CCOM ----	Advanced Departmental Elective	3
HUMA ----	General Education Course in Humanities	3
CISO ----	General Education Course in Social Sciences	3
XXXX ----	General Elective	3
XXXX ----	General Elective	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
CCOM 4095	Software Engineering Project	3
CCOM ----	Advanced Departmental Elective	3
HUMA ----	General Education Course in Humanities	3
CISO ----	General Education Course in Social Sciences	3
XXXX ----	General Elective	3
TOTAL		15

DEPARTMENTAL ELECTIVES

CODE	DESCRIPTION	CREDITS	CLASSIFICATION¹
CCOM 3027	Object Oriented Programming Lang.	3	Intermediate
CCOM 3036	Visual Programming	3	Intermediate
CCOM 3042	Computer Architecture	3	Advanced
CCOM 3045	File Processing	3	Advanced
CCOM 3115	Microprocessor Applications	3	Advanced
CCOM 3135	Topics in Computer Science	1-6	Variable
CCOM 3985	Undergraduate research	2	Variable
CCOM 4018	Computer Networks	3	Advanced
CCOM 4019	Web Programming	3	Advanced
CCOM 4125	Artificial Intelligence	3	Advanced
CCOM 4135	Introduction to Compiler Design	3	Advanced
CCOM 4305	Introduction to Web Design	4	Intermediate
CCOM 4306	Image Design for Internet Applications	3	Intermediate
CCOM 4307	Troubleshooting PC's	4	Advanced
CCOM 4401	Mobile Application Development	3	Advanced
CCOM 4501	Introduction to Robotics	4	Intermediate
CCOM 4991	Independent Studies I	Variable	Intermediate
CCOM 4992	Independent Studies II	Variable	Advanced
CCOM 4501	Introduction to Robotics	4	Intermediate

CURRICULAR SEQUENCE 2017

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CCOM 3001	Computer Programming I	5
CCOM 3010	Logic Levels	3
CCOM 3025	Introduction to Computer Systems	3
INGL 3101	Basic English I	3
INGL 3113	Basic English Oral Practice I	0
MATE 3171	Pre-Calculus I	3
TOTAL		17

Second Semester		
CODE	DESCRIPTION	CREDITS
CCOM 3002	Computer Programming II	5
CCOM 3015	Computers In Society	3
CCOM 3035	Computer Organization	3
MATE 3172	Pre-Calculus II	3
INGL 3102	Basic English II	3
INGL 3114	Basic English Oral Practice II	0
TOTAL		17

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CCOM 3020	Discrete Mathematics	3
CCOM 4005	Data Structure And Algorithm Analysis	3
MATE 3031	Calculus I	4
CIBI 3001	Introduction to Biological Sciences	3
ESPA 3101	Basic Spanish I	3
TOTAL		16

Second Semester		
CODE	DESCRIPTION	CREDITS
CCOM 4006	Design And Analysis of Algorithms	3
CCOM 4007	Intro. to Prob. and Stat. with Applications to CS	4
CCOM 4065	Linear Algebra	3
CIBI 3002	Introduction to Biological Sciences	3
ESPA 3102	Basic Spanish II	3
TOTAL		16

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CCOM 3041	Operating Systems	3
CCOM 4025	Organization of Programming Languages	3
CCOM ----	Intermediate Departmental Elective	3
FISI 3011	University Physics I	3
FISI 3013	University Physics Lab. I	1
ESPA 3208	Writing and Style	3
TOTAL		16

Second Semester		
CODE	DESCRIPTION	CREDITS
CCOM 4115	Database Design	3
CCOM ----	Intermediate Departmental Elective	3
FISI 3012	University Physics II	3
FISI 3014	University Physics Lab. II	1
INGL 3015	English for Science and Technology	3
----	General Elective	3
TOTAL		16

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CCOM 4075	Software Engineering	3
CCOM ----	Intermediate Departmental Elective	3
CCOM ----	Advanced Departmental Elective	3
HUMA ----	General Education Course in Humanities	3
CISO ----	General Education Course in Social Sciences	3
----	General Elective	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
CCOM 4095	Software Engineering Project	3
HUMA ----	General Education Course in Humanities	3
CISO ----	General Education Course in Social Sciences	3
----	General Elective	3
----	General Elective	3
TOTAL		15

DEPARTMENTAL ELECTIVES

CODE	DESCRIPTION	CREDITS	CLASSIFICATION¹
CCOM 3027	Object Oriented Programming Language	3	Intermediate
CCOM 3036	Visual Programming	3	Intermediate
CCOM 3042	Computer Architecture	3	Advanced
CCOM 3115	Microprocessor Applications	3	Advanced
CCOM 3135	Topics in Computer Science	1-6	Variable
CCOM 3985	Undergraduate research	2	Variable
CCOM 4018	Computer Networks	3	Advanced
CCOM 4019	Web Programming	3	Advanced
CCOM 4125	Artificial Intelligence	3	Advanced
CCOM 4135	Introduction to Compiler Design	3	Advanced
CCOM 4305	Introduction To Web Design	4	Intermediate
CCOM 4306	Image Design For Internet Applications	3	Intermediate
CCOM 4307	Troubleshooting PC's	4	Advanced
CCOM 4401	Mobile Application Development	3	Advanced
CCOM 4420	Cloud Computing Apps	3	Advanced
CCOM 4501	Introduction to Robotics	4	Intermediate
CCOM 4991	Independent Studies I	Variable	Intermediate
CCOM 4992	Independent Studies II	Variable	Advanced

Notes:

- Students must take a minimum of six (6) credits of their departmental electives from among those classified as advanced electives.
- The classification of CCOM 3135 Topics in Computer Science and CCOM 3985 Undergraduate research depends on topic
- All core courses must be approved with a grade no lower than C and students must earn a minimum concentration index of 2.00 including departmental electives.

FACULTY

Colón Colón, Luis. *Professor*, M.S., Computer Science, University of Arkansas, Fayetteville.

López Gerena, Juan O. *Instructor*, M.S., Pure Mathematics, University of Puerto Rico, Mayaguez Campus.

Pérez Arnau, Emilio. *Instructor*, M.S., Computer Science, Florida Institute of Technology.

Puig Hernández, José. *Professor*, M.S., Computer Science, Florida Institute of Technology

Ramírez Toledo, Aixa. *Professor*, M.S., Applied Mathematics, University of Puerto Rico, Rio Piedras Campus.

Valenzuela Andrade, Eliana. *Professor*, Ph.D., Computing and Information Sciences and Engineering, University of Puerto Rico, Mayaguez Campus.

LIST OF COURSES

CCOM

CCOM 3001: COMPUTER PROGRAMMING I, five (5) credits, three (3) hours of lecture and two (2) hours of laboratory per week. The course introduces students to the basic concepts of a computer system, and the necessary concepts for the creation, encoding, documentation, and debugging of programs.

CCOM 3002: COMPUTER PROGRAMMING II, five (5) credits, three (3) contact hours per week. Pre-requisites: CCOM 3001. This course was designed as a continuation of CCOM 3001 and delves deeper into the topics presented in the first course. It includes such topics as recursion, sorting, pointers, linked lists, searching and sorting algorithms, objects, and others.

CCOM 3010: Logical Levels, Credits: three (3). Impact of logical levels in the field of computer science. Emphasis on the study of excellence and its duplication in the academia and profession. Application of logical reasoning both deductive and inductive in the design of algorithmic solutions. Strategies of reasoning, creativity, and memorization.

CCOM 3015: COMPUTERS IN SOCIETY; three (3) credits, three (3) contact hours per week. Integration of concepts and theories presented in concentration courses. It emphasizes the ethical questions in computing. Matters of privacy, security and auditing are discussed. It also incorporates the evaluation of today's technology and its uses in solving problems.

CCOM 3020: DISCRETE MATHEMATICS, three (3) credits, three (3) contact hours per week. Pre-requisites: MATE 3171. This course is designed for students who attend their first or second year in the Computer Science program or a Mathematics program. In this course students will learn techniques to produce elementary mathematical proofs. The course also will introduce students to topics related to sets or processes that can be enumerated or associated with subsets of the natural numbers. The topics that will be discussed will be necessary for the other courses in mathematics and computer science. Content of the course: Logic and proofs, Sets and relations, Functions, Integers, Induction and Recursion, Principles of Counting, Combinatorics and Discrete Probability, and Graphs and Trees.

CCOM 3025: INTRODUCTION TO COMPUTER SYSTEMS, three (3) credits, three (3) contact hours per week. The course introduces the organization and structure of a computer system. Students learn the basic components of logical and arithmetic circuits, binary arithmetic, and representation of numbers.

CCOM 3027: OBJECT ORIENTED PROGRAMMING LANGUAGE, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 3002. The course provides techniques and programming strategies to solve problems in an object-oriented programming language. It explores the study of object-oriented programming.

CCOM 3035: COMPUTER ORGANIZATION, three (3) credits, three (3) contact hours per week. Pre-requisites: CCOM 3025. This course gives students the basic concepts of computer

structures and architecture, and machine language. It also teaches assembly language, addressing modes, input, output, and sub-routines, among others.

CCOM 3036: VISUAL PROGRAMMING, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 3002. Detailed study of the writing, syntax and encoding of a visual programming language.

CCOM 3041: OPERATING SYSTEMS, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 3035 and CCOM 4005. This course provides the basics of modern operating systems. It studies such concepts as creating, handling, planning and synchronizing processes, managing memory and virtual memory, creating and handling files, I/O system management, and protection and safety issues.

CCOM 3042: COMPUTER ARCHITECTURE, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 3035. This course studies the main components of a computer system, and explores further the concepts studied in CCOM 3035. Bus and memory systems, sets of instructions, microprogramming and CPU design, control and structure are studied. It also includes a study of parallel processing elements such as pipelining and processing by multiple processors.

CCOM 3115: MICROPROCESSOR APPLICATIONS, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 3035. The course includes the study of the theory of combinational and sequential circuits, and the structure and programming of microprocessors. Students become familiarized with the basic concepts of microprocessors and their applications.

CCOM 3135: TOPICS IN COMPUTER SCIENCE, variable credits. Pre-requisite: Depends on topic or authorization from Department Chair. This course presents topics of current interest which are not covered in the regular courses. The topics to be discussed will be determined by the faculty of the department when the course is offered.

CCOM 3985 – UNDERGRADUATE RESEARCH ON COMPUTER SCIENCE TOPICS, two (2) credits, six (6) contact hours per week. Pre-requisite: Professor's authorization. This course is intended to introduce undergraduate students from all STEM disciplines to the computer science research process. Topics include scientific method, planning, research and documentation, ethics, abstracts, poster sessions and oral presentation of the projects. Because the course will enroll from different disciplines, students will also become acquainted with research topics, ways of framing arguments, and making points outside their fields of study, which will help them develop a more interdisciplinary perspective and explore graduate school options.

CCOM 4005: DATA STRUCTURE AND ALGORITHM ANALYSIS, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 3002, MATE 3171. Co-requisite: CCOM 3020. This course is designed to strengthen the study of data structures introduced in CCOM 3002 (Computer Programming II), such as lists and stacks. New data structures such as binary trees and queues are studied. The practical approach will be enhanced during the course by means of the use of techniques for the analysis and design of efficient algorithms. The results of this practice will be incorporated into decisions for the design of data management systems.

CCOM 4006: DESIGN AND ANALYSIS OF ALGORITHMS, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 4005, CCOM 3020. The course is designed to introduce students to various techniques in the development of algorithms such as divide-and-conquer, dynamic programming, and backtracking. Graph algorithms are also discussed. Tools for analyzing the complexity of the algorithms discussed are provided and their complexity is compared to the basic algorithms to solve similar problems. It also introduces the student to the theory of computation.

CCOM 4007: INTRODUCTION TO PROBABILITY AND STATISTICS WITH APPLICATIONS TO COMPUTER SCIENCE, four (4) credits, four (4) contact hours per week. Pre-requisite: CCOM 3020, MATE 3172. This course provides the basic concepts about probability and statistics including: Theory of probability, nature and meaning of statistics, data organization, measures of location and variability, central tendency, probability elements, discrete and continuous distributions, elements of statistical inference, regression, and simple correlation. The students will apply the concepts using specialized software.

CCOM 4018: COMPUTER NETWORKS, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 3041. The goal is to teach the fundamental concepts and principles of networking, focusing particularly on how they apply to the Internet. The course will cover a wide range of topics (see the lecture schedule for a listing of topics). While the class has a textbook, we will not follow its order of presentation but will instead use the text as a reference when covering each individual topic. The course will also have a substantial programming project, so students get hands-on experience with socket programming.

CCOM 4019: WEB PROGRAMMING WITH PHP/MYSQL, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 4305, CCOM 4115. This course emphasizes techniques used in dynamic website development. It demonstrates the tools needed to design a website with all its components by using the PHP programming language and the MySQL database management system.

CCOM 4025: ORGANIZATION OF PROGRAMMING LANGUAGES, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 4005. This course provides a theoretical and formal background to various aspects of programming languages and the compilation process. High-level languages that use various programming paradigms, including imperative and declarative, are discussed. The execution and programs created by means of construction languages will be emphasized. Students will be required to develop programs in various languages such as Prolog and Scheme.

CCOM 4065: LINEAR ALGEBRA, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 3002, MATE 3031. In this course, numerical methods will be studied to solve matrix algebra problems. Several algorithms will be studied and implemented using a high-level programming platform. Test problems will be used to illustrate the strengths and weaknesses of the methods. The topics that will be studied include: properties of matrices, the representation of floating point for real numbers, methods to solve linear systems (direct and iterative), minimum squares, and calculation of eigenvalues of matrices. At the end of each topic

an example of a real-life problem will be presented for which one of the methods discussed to solve the problem is needed.

CCOM 4075: SOFTWARE ENGINEERING, three (3) credits, three (3) contact hours per week. Pre-requisites: CCOM 3041, CCOM 4115, CCOM 4006, CCOM 4007. This course provides a formal background in the area of software engineering, design, specifications and evaluation of high-quality software. Students are required to participate in a group project.

CCOM 4095: SOFTWARE ENGINEERING PROJECT, three (3) credits, three (3) contact hours per week. Pre-requisites: CCOM 4075. Individual research or practical project in an industry. The student will define, design, and implement an application program utilizing programming language (high or low-level) or will do a research project applying the theory learned and applying the correct programming techniques. Students are required to present a proposal for the project, which will be evaluated and approved by the instructor at the beginning.

CCOM 4115: DATABASE DESIGN, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 4025. This course is an introduction to Database Management Systems (DBMS), with emphasis on relational database design and application development. Includes the study of Entity-Relationship Model, Relational Model, Object-Oriented Model and Object-Relational Model. Explores Techniques for database design: E-R modeling, UML modeling, E-R to relational mappings, functional dependencies, and normalization. Contains discussions of Relational Algebra, Structured Query Language (SQL), and Web applications, provides an introduction to Transaction Processing and Database Recovery, and finally presents an overview of DBMS implementation techniques. Students are provided hands-on training in database design, development, and implementation using a relational DBMS software.

CCOM 4125: ARTIFICIAL INTELLIGENCE, three (3) credits, three (3) contact hours per week. Pre-requisites: CCOM 4006, CCOM 4007. An introduction to the basic concepts and techniques of artificial intelligence (AI) systems and their applications. Students will apply AI concepts through the development of multiple computational systems.

CCOM 4135: INTRODUCTION TO COMPILER DESIGN, three (3) credits, three (3) contact hours per week. Pre-requisite: CCOM 4025. Introduction to the translation of high to low-level programs through the use and design of compilers. Regular language and the basic steps for designing compilers (scanning, parsing, semantic analysis, and code generation) will be studied.

CCOM 4305: INTRODUCTION TO WEB DESIGN, four (4) credits, three (3) lecture hours and one (1) hour of laboratory per week. Pre-requisite: CCOM 4306. The course emphasizes the techniques to develop web sites, demonstrates the methodology to develop user-oriented web pages, and presents the necessary tools to design a web site with all its components.

CCOM 4306: IMAGE DESIGN FOR INTERNET APPLICATIONS, three (3) credits, two (2) lecture hours and one laboratory hour per week. Pre-requisite: CCOM 3002. This course emphasizes various techniques to develop graphics for use on the web, including animations. The course presents the necessary tools to create, manage and optimize graphics for use on the web.

CCOM 4307: TROUBLESHOOTING PC's, four (4) credits, two (2) lecture hours and two (2) laboratory hours per week. Pre-requisite: CCOM 3041. In this course the student develops the skills to search and solve problems in networks, physical components, software, and operating systems related to computers (servers and desktops) and personal security. It provides an introduction to security systems (firewalls, antivirus, anti-spam, etc.).

CCOM 4401: MOBILE APPLICATION DEVELOPMENT, three (3) credits, three (3) lecture hours per week. Pre-requisites: CCOM 4005 and either CCOM 3027 or CCOM 3036. This course provides the fundamental principles of designing and developing a software application for handheld devices. The topics include the programming principles, the available architectures, the user experience considerations, the design process and developing a mobile app. Students will design, code, debug, and experiment with basic applications in their OS of choice using emulators and hardware devices. Students will produce a working prototype of an original application and evaluate its performance in a real-world scenario. The focus of the programming experience is on the front-end of applications.

CCOM 4420: CLOUD COMPUTING APPLICATIONS, three (3) credits, three (3) lecture hours per week. Pre-requisites: CCOM 4401 or CCOM 4019. The course provides the principles of designing and developing a software application for a ubiquitous device connected to Web-based cloud computing systems. Topics include the history of network systems and the scalability that led to the cloud, the available architectures including front and back end, the modern cloud data centers and their tiers, the user experience considerations, system and user security, the programming principles to design and develop an app, and the current market for these technologies. Students will design, code, debug, and experiment with cloud-based applications, using emulators and hardware devices. Students will produce a prototype of an original application that works efficiently and secure with a cloud system, and evaluate its performance in a real-world scenario. The focus of the programming experience is on the back-end of applications; thus front-end development experience is required.

CCOM 4501: INTRODUCTION TO ROBOTICS, four (4) credits, two (2) lecture hours and two (2) laboratory hours per week. Pre-requisites: MATE 3172, CCOM 3002. This course introduces the fundamental concepts of robotics, exposing students to some of the contemporary happenings in robotics, including current robotics research, applications, and robot contests. Topics include how robots move, sense, and perceive the world around them as well as problem solving strategies. In the course project, students construct robots using Lego Mindstorms, Tetrix or VEX, reinforcing the basic principles developed in lectures.

CCOM 4991: INDEPENDENT STUDIES I, variable credits. Pre-requisites: 12 approved credits from the Computer Science program and the authorization of the chair of the Computer Science Department. Research and develop a solution to a computer science problem selected jointly by the student and the professor. A written proposal and final report are required, following the guidelines provided by the program faculty.

CCOM 4992: INDEPENDENT STUDIES II, variable credits. Pre-requisite: CCOM 4991. Continue research and development from CCOM 4991. A written proposal and final report are required, following the guidelines provided by the program faculty.

SICI**SICI 3028: APPLICATION SOFTWARE, three (3) credits, three (3) lecture hours per week.**

The course provides the theoretical knowledge and the practical skills necessary for using profitably the three types of the most used software: word processors, electronic worksheets, database handling systems, and other types of programs.

TELEVISION AND RADIO COMMUNICATION DEPARTMENT

BACHELOR IN TELEVISION AND RADIO COMMUNICATION TECHNOLOGY (4201)

The Bachelor in Television and Radio Communication Technology combines courses of Arts and Sciences with theoretical and skills courses in communications, which allow students to be trained in design and production of content for various media. Although focus is placed on sound and video production, the curriculum emphasizes on the importance of designing and producing content across media platforms. The program also provides the offering of skill courses in other disciplines of mass communications, including public relations, advertising and journalism, centering on the role of these professions in tele-radial communication in Puerto Rico and the World. **The Bachelor degree is accredited by the Accrediting Council on Education in Journalism and Mass Communication (ACEJMC) since 2013.**

The program has been divided in emphasize areas with concentration electives that are in the current curriculum sequence. Thus, generally grouped courses offered by the Department of Communication Tele-Radio for the student to be more focused on their academic work. The areas of emphasis are:

- Digital Cinema
- Strategic Communication (Advertising and Public Relations)
- Photography
- Multimedia
- Journalism
- Production and Direction

The first two years of each area of emphasis is the same. The changes start during the third and fourth year of the curriculum.⁵⁴

⁵⁴ If not on grade level, do not qualify as second concentrations, and are sheltered by this policy, since they are an integral part of concentrations or specialties and do not constitute additional studies to lead to the Bachelor, although they may be established by special notation on the student's transcript.

CURRICULAR SEQUENCE**Course Program****(First two years)****FIRST YEAR**

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3001	Introductory Mathematics I	3
COMU 3007	History and Development of Radio and Television	3
ESPA 3101	Basic Spanish I	3
INGL 3101	Basic English I	3
INGL 3113	Basic English I Laboratory	0
COMU 3021	Digital Photography	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3015 or CISO 3155 or ESTA 3001	Course in Statistics	3
COMU 3005	Fundamentals of Communication	3
ESPA 3102	Basic Spanish II	3
INGL 3102	Basic English II	3
INGL 3114	Basic English II Laboratory	0
COMU 3201	Scriptwriting	2
COMU 3202	Scriptwriting Practice Laboratory	1
TOTAL		15

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
HUMA	Course in Humanities	3
COMU 3211	Principles of Radio	2
COMU 3212	Laboratory for Principles of Radio Laboratory	1
CISO	Course in Social Sciences	3
ESPA 3007	Oral Communication	3
CISO	Course in Social Sciences	3
ESPA 3208	Drafting and Style	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
HUMA	Course in Humanities	3
COMU 3115	Ethical and Legal Aspects of Television and Radio Communication	3
MERC 3115	Marketing Principles	3
CISO	Course in Social Sciences	3
COMU 3043	Television Principles	2
COMU 3046	Television Principles Laboratory	1
TOTAL		15

Emphasis Area: Strategic Communications

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CIFI 3001 or CIBI 3001	Introd. to Physics I or Principles of Biology I	3
HUMA	Course in Humanities	3
SICI 3028	Applied Programming	3
HIST 3177 or HIST 3245	Social and Cultural History of Puerto Rico Summary History of Puerto Rico	3
COMU 3016	Elective course emphasis area: Public Relations Principles	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
CIFI 3002 or CIBI 3002	Introd. to Physics II or Principles of Biology II	3
HUMA	Course in Humanities	3
INGL 3093	Conversational English for Professionals	3
	Elective course	3
COMU 4055	Elective course emphasis area: Principles of Journalism, Written News for Radio and Television	3
TOTAL		15

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
COMU 4007	Elective course emphasis area: Advertising	3
	Elective Course	3
	Elective Course	3
CISO	Course in Social Sciences	3
INGL 3061	Oral and Written English for Students of Communications	3
	Elective in General Studies	3
		18

Second Semester		
CODE	DESCRIPTION	CREDITS
COMU 4065	Elective course emphasis area: Advertising and Public Relations Campaigns	3
COMU 4035	Radio and Television Programming	3
COMU4335	Practicum/Seminar	3
	Elective Course	3
	TOTAL	12
	TOTAL CREDITS: 123	

Emphasis Area: Journalism

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CIFI 3001 or CIBI 3001	Introd. to Physics I or Principles of Biology I	3
HUMA	Course in Humanities	3
SICI 3028	Applied Programming	3
HIST 3177 or HIST 3245	Social and Cultural History of Puerto Rico Summary History of Puerto Rico	3
COMU 4055	Elective course emphasis area: Principles of Journalism	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
CIFI 3002 or CIBI 3002	Introd. to Physics II or Principles of Biology II	3
HUMA	Course in Humanities	3
INGL 3093	Conversational English for Professionals	3
	Elective course	3
COMU 3135	Elective course emphasis area: Journalism Genres: New Platforms	3
TOTAL		15

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
	Elective Course	3
	Elective Course	3
CISO	Course in Social Sciences	3
INGL 3061	Oral and Written English for Students of Communications	3
	Elective in General Studies	3
COMU 4041	Elective course emphasis area: Advanced Television and Radio Production Workshop	2
COMU 4043	Elective course emphasis area: Advanced Television and Radio Production Workshop Laboratory	1
or		1
COMU 3117	Elective course emphasis area: Design and Production of Multimedia I	3
TOTAL		18
Second Semester		
CODE	DESCRIPTION	CREDITS
COMU 4035	Radio and Television Programming	3
COMU4335	Practicum/Seminar	3
	Elective Course	3
COMU 4025	Elective course emphasis area: Broadcast Journalism	3
TOTAL		12
TOTAL CREDITS: 123		

Emphasis Area: Production and Direction

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CIFI 3001 or CIBI 3001	Introd. to Physics I or Principles of Biology I	3
HUMA	Course in Humanities	3
SICI 3028	Applied Programming	3
HIST 3177 or HIST 3245	Social and Cultural History of Puerto Rico Summary History of Puerto Rico	3
COMU 4027	Elective course emphasis area: Audio for Media	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
CIFI 3002 or CIBI 3002	Introd. to Physics II or Principles of Biology II	3
HUMA	Course in Humanities	3
INGL 3093	Conversational English for Professionals	3
	Elective Course	3
COMU 4041	Elective course emphasis area: Advanced Television and Radio Production Workshop	2
COMU 4043	Laboratory of Advanced Television and Radio Production Workshop	1
TOTAL		15

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
	Elective Course	3
	Elective Course	3
CISO	Course in Social Sciences	3
INGL 3061	Oral and Written English for Students of Communications	3
	Elective in General Studies	3
COMU 4155	Elective course emphasis area: Advanced Editing and Post-Production	3
TOTAL		18
Second Semester		
CODE	DESCRIPTION	CREDITS
COMU 4035	Radio and Television Programming	3
COMU4335	Practicum/Seminar	3
	Elective Course	3
COMU4028	Elective course emphasis area: Production and Direction of Documentaries	3
TOTAL		12
TOTAL CREDITS:		123

Emphasis Area: Photography

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CIFI 3001 or CIBI 3001	Introd. to Physics I or Principles of Biology I	3
HUMA	Course in Humanities	3
SICI 3028	Applied Programming	3
HIST 3177 or HIST 3245	Social and Cultural History of Puerto Rico Summary History of Puerto Rico	3
COMU 3015	Elective course emphasis area: Intermediate Photography	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
CIFI 3002 or CIBI 3002	Introd. to Physics II or Principles of Biology II	3
HUMA	Course in Humanities	3
INGL 3093	Conversational English for Professionals	3
	Elective Course	3
COMU 3022	Elective course emphasis area: Digital Photography II	3
TOTAL		15

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
	Elective Course	3
	Elective Course	3
CISO	Course in Social Sciences	3
INGL 3061	Oral and Written English for Students of Communications	3
	Elective in General Studies	3
PUCO 4086	Elective course emphasis area: Advertising Photography	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
COMU 4035	Radio and Television Programming	3
COMU4335	Practicum/Seminar	3
	Elective Course	3
COMU 3117	Elective course emphasis area: Design and Production of Multimedia I	3
TOTAL		12
TOTAL CREDITS:		123

Emphasis Area: Multimedia

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CIFI 3001 or CIBI 3001	Introd. to Physics I or Principles of Biology I	3
HUMA	Course in Humanities	3
SICI 3028	Applied Programming	3
HIST 3177 or HIST 3245	Social and Cultural History of Puerto Rico Summary History of Puerto Rico	3
COMU 3106	Elective course emphasis area: Graphic Design for Communication	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
CIFI 3002 or CIBI 3002	Introd. to Physics II or Principles of Biology II	3
HUMA	Course in Humanities	3
INGL 3093	Conversational English for Professionals	3
	Elective Course	3
COMU 3117	Elective course emphasis area: Multimedia Production	3
TOTAL		15

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
	Elective Course	3
	Elective Course	3
CISO	Course in Social Sciences	3
INGL 3061	Oral and Written English for Students of Communications	3
	Elective in General Studies	3
COMU 3127	Elective course emphasis area: Design and Production of Multimedia II	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
COMU 4035	Radio and Television Programming	3
COMU4335	Practicum/Seminar	3
	Elective Course	3
COMU 4155	Elective course emphasis area: Advanced Editing and Post-Production	3
TOTAL		12
TOTAL CREDITS: 123		

Emphasis Area: Digital Cinema

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CIFI 3001 or CIBI 3001	Introd. to Physics I or Principles of Biology I	3
HUMA	Course in Humanities	3
SICI 3028	Applied Programming	3
HIST 3177 or HIST 3245	Social and Cultural History of Puerto Rico Summary History of Puerto Rico	3
COMU 3019	Elective course emphasis area: Language and Analysis of Cinematography	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
CIFI 3002 or CIBI 3002	Introd. to Physics II or Principles of Biology II	3
HUMA	Course in Humanities	3
INGL 3093	Conversational English for Professionals	3
	Elective Course	3
COMU 3121	Elective course emphasis area: Photography for Digital Cinema	2
COMU 3123	Laboratory of Photography for Digital Cinema	1
TOTAL		15

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
	Elective Course	3
	Elective Course	3
CISO	Course in Social Sciences	3
INGL 3061	Oral and Written English for Students of Communications	3
	Elective in General Studies	3
COMU 4155	Elective course emphasis area: Advanced Editing and Post-Production	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
COMU 4035	Radio and Television Programming	3
COMU4335	Practicum/Seminar	3
	Elective Course	3
COMU 4131	Elective course emphasis area: Digital Filmmaking Workshop	2
COMU 4133	Laboratory of Digital Filmmaking Workshop	1
TOTAL		15
TOTAL CREDITS: 123		

FACULTY

Berríos Hernández, Rosamary, M.F.A., *Associate Professor*, Master in Fine Arts, Visual Arts, Universidad Nacional Autónoma de México.

Díaz Hernández, Anilyn, Ph.D., *Associate Professor*, Communications, University of Massachusetts Amherst.

Fonseca Delgado, José, M.A., *Associate Professor*, Master of Arts, Communications, City University of New York.

Garriga Picó, Ingrid, M.A., *Professor*, Master of Arts, Communications, Fairfield University.

González Cortés, Otilio, Ph.D., J.D., *Professor*, Doctor of Philosophy, Communications, University of Florida; Juris Doctor, Escuela de Derecho, Universidad de Puerto Rico.

Gutiérrez Pérez, Emanuel, M.M.E., *Professor*, Master of Musical, Technology, New York University.

Luciano Nieves, Juan, Ph.D., *Professor*, Doctor of Philosophy, Communications, Wayne State University.

Ortega Solís, José, M.A., *Associate Professor*, Master of Arts, Educational Technology, Universidad del Sagrado Corazón, Puerto Rico.

Vélez Morales, Mildred, M.A., *Instructor*, Master of Arts, Public Communications, Universidad de Puerto Rico Recinto de Río Piedras.

LIST OF COURSES

COMU 3005: FUNDAMENTALS OF COMMUNICATION, three (3) credits, three (3) contact hours per week. Students are exposed to the basic concepts of the communication process. We study the fundamentals of communications and theories developed by scholars in the field, both personal and mass communications. The course emphasizes the study of mass media, largest industries in the world of communications, linguistics concepts, personality, perception, persuasion and social changes.

COMU 3007: HISTORY AND DEVELOPMENT OF RADIO AND TELEVISION, three (3) credits, three (3) contact hours per week. Origins, history and development of radio and television and its relationship with other mass media, new technologies and globalization. We study the technological advances and new distribution platforms. It exposes students to ethical principles and social, economic and governmental controls impacting radio and television. (Previous code is COMU 1026).

COMU 3015: INTERMEDIATE PHOTOGRAPHY, three (3) credits, three (3) contact hours per week. Pre-requisite: AGRA 1009. The course is designed as a continuation of the course Photographic Process I. Technical and creative processes of modern photography will be applied to produce work of professional and commercial quality. Artistic photography will be emphasized.

COMU 3016: PUBLIC RELATIONS PRINCIPLES, three (3) credits, three (3) contact hours per week. Introduction to basic public relations principles in today's society. The steps to develop successful campaigns to profit and non-profit organizations are studied. Theoretical public relations concepts are emphasized: planification and administration, ethics and research and communication and public opinion. In addition, public relations are portrayed as a constant study area according to social trends. The course prepares students to manage organizational crisis, public opinion control, laws that regulate the discipline, integration to related areas such as marketing and advertising, specific audiences and emerging social trends.

COMU 3019: LANGUAGE AND ANALYSIS OF CINEMATOGRAPHY, three (3) credits, three (3) contact hours per week. This course focuses on describing and analyzing the narrative structure of a film. Analyze techniques, resources, genres and cinematic forms. Reflections based on the moving image as an artistic expression, language and aesthetics to communicate a story to the viewer.

COMU 3021: DIGITAL PHOTOGRAPHY I, three (3) credits, four (4) contact hours per week. Proper use of the camera and digital photographic equipment. Application of basic methods and techniques for learning and image domain. Theory of natural light and using photo editing programs. Development of aesthetic appreciation of photographic creation and its application to the new technologies.

COMU 3022: DIGITAL PHOTOGRAPHY II, three (3) credits, four (4) contact hours per week. Proper use of the camera and digital photographic equipment. Application of basic methods and techniques for learning and image domain. Theory of natural light and using photo editing programs. Development of aesthetic appreciation of photographic creation and its application to the new technologies.

COMU 3025: BLACK AND WHITE PHOTOGRAPHY ANALOG, three (3) three hours contact hours per week. Pre-requisite: COMU 3021. Basic principles in black and white photography. Application of methods and techniques in analog and image with practical experience outdoors and in the laboratory.

COMU 3043: TELEVISION PRINCIPLES, two (2) credits, two (2) contact hours per week. Co-requisite: COMU 3046: Television Principles Laboratory. Introduction to technical and conceptual aspects of television (production theory, lightning, audio, set design, equipment operation, video recording and direction). Emphasis in creative aspects, decision-making and group work during television productions.

COMU 3046: TELEVISION PRINCIPLES LABORATORY, two (2) credits, five (5) contact hours per week. Intensive laboratory in the technical and conceptual aspects of television (production theory, lightning, audio, set design, equipment operation, video recording and direction). Emphasis in creative aspects, decision-making and group work during television productions.

COMU 3106: GRAPHIC DESIGN FOR COMMUNICATION, Three credit (3), three (3) contact hours per week. The course is an introduction to graphic design led to various media. The course will use programs of visual design, special effects, print, layout and assembly in two and three dimensions. They will be used while discussing the elements of harmony of color, texture, balance, depth and perspective. The development of the creative process and artistic exploration will be the main focus of the course.

COMU 3115: ETHICAL AND LEGAL ASPECTS OF TELEVISION AND RADIO COMMUNICATION, three (3) credits, three (3) contact hours per week. Prerequisite: COMU 1026. The study of the legal and ethical fundamentals of Tele-Radial Communication. The course examines the constitutional principles on which the right to free expression is built. Study various laws, regulations and court decisions that have the effect of limiting this freedom of expression. The course explains the scope and justification of broadcast regulations and how it affects radio stations, television and cable TV. It discusses self-regulation policies that apply to the telecommunication industries and related professions. Also studies ethics in professions related to tele-radial communication, including journalism, advertising, public relations, production and programming.

COMU 3117: MULTIMEDIA PRODUCTION, three (3) credits, three (3) contact hours per week. This course is an elective of the Tele-Radial Communication Department, that looks to integrate the advanced production techniques using multimedia programs. The course aims to give the student the necessary tools to work in the design and production of multimedia projects.

COMU 3121: PHOTOGRAPHY FOR DIGITAL CINEMA, two (2) credits, two (2) contact hours per week. This course focuses on the study of light as film language. Revises the basics, elements, processes and techniques for the proper use of the camera and lighting equipment. It offers practical and conceptual tools to meet new creative challenges and digital film professionals.

COMU 3123: LABORATORY OF PHOTOGRAPHY FOR DIGITAL CINEMA, one (1) credit, three (3) contact hours of laboratory. Co-requisite: COMU 3121: Photography for Digital Cinema. This course focuses on the study of light as film language. Revises the basics, elements, processes and techniques for the proper use of the camera and lighting equipment.

Development of practical exercises that allow students get the aesthetics and right ambience for film projects.

COMU 3127: DESIGN AND PRODUCTION OF MULTIMEDIA II, three (3) credits, three (3) contact hours of workshop. This course is a continuation of Multimedia Design and Production I. In it, students will begin to produce applications with a high level of complexity. This course is aimed at new media research and development of advanced creative methods and techniques in developing multimedia or interactive media.

COMU 3135: JOURNALISM GENRES - NEW PLATFORMS, three (3) credits, three (3) contact hours per week. The course begins with the theory and writing of journalistic genres from the news, with an emphasis on building the body of a current event note, in addition to presenting the different kinds of news. Explore also intensive theory and practice other journalistic genres: Depth Feature, Human Interest Feature and Opinion Piece (the Publisher).

COMU 3201: SCRIPTWRITING, two (2) credits, two (2) contact hours per week. Co-requisite: COMU 3202: Practice writing scripts. Theory and practice of the art and techniques of development and scriptwriting electronic media, highlighting aspects of creativity, organization, design and drafting. Students will also be introduced to theories of creativity in mass media that enable them to apply these theories and develop techniques for script writing. (Previous code is COMU 2042).

COMU 3202: SCRIPTWRITING PRACTICE, one (1) credit, three (3) contact hours per week. Co-requisite: COMU 3201. Practice writing scripts for various media highlighting aspects of design, organization and writing. (Previous code is COMU 2045).

COMU 3211: PRINCIPLES OF RADIO, two (2) credits (3) contact hours per week. Prerequisite: COMU 3201-02. Co-requisite: COMU 3212. Introduction to production and direction of radio programs. The student will acquire knowledge and skills in the production of different types of radio programs. Also develop skills in the use and management of contemporary technologies of sound production. We will study issues related to the radio industry such as: Sound, Psychoacoustics, Broadcasting Systems, Advertising, Radio Programming and Production and Transmission Technologies. (Previous code is COMU 2038).

COMU 3212: LABORATORY FOR PRINCIPLES OF RADIO, one (1) credit, three (3) hours of practice concurrent with COMU 3211. The student will develop basic skills in producing and directing radio programs. Also be trained to design, produce and evaluate sound materials with the aim of broadcasting. The student will practice the areas of speech, animation, pre-production, direction, sound recording and editing, programming and operation of contemporary technologies and radio broadcast production. (Previous code is COMU 2039).

COMU 4007: PRINCIPLES OF PUBLICITY, three (3) credits, three (3) contact hours per week. The course introduces students to the world of publicity and familiarizes them with the historical development and current impact of publicity within marketing, and the consumer society. The relation between publicity and the consumer is analyzed and the various elements of an advertisement and its effect on the purchasing behavior of the average consumer. Students become familiar con the various methods of disseminating the message and with the necessary considerations taken into account by the publicist when developing an effective media campaign. Students are exposed to the concept of a publicity campaign and the analysis of the elements

required for a successful campaign. Finally, students become familiar with the various institutions that contribute to publicity.

COMU 4025: BROADCAST JOURNALISM, three (3) credits, three (3) contact hours per week. Introduction to the basic concepts in the communication process. In depth study of the theories applied to both personal and mass communication. Research into the effects of mass media on individuals and society.

COMU 4027: AUDIO FOR THE MEDIA, three (3) credits, three (3) contact hours per week. This course presents the advanced concepts of modern audio technology and sound production for the media. The course involves the processes of pre-production, production and post-production and how these culminate in the finished production. Topics of the course include recording, talent management, trends and practices of the industry, and/or musical genres, audio processes for video, development of the critical ear, placing of microphones and the use and handling of the new sound technologies.

COMU 4028: PRODUCTION AND DIRECTION OF DOCUMENTARIES, three (3) credits, three (3) contact hours per week. This course is a workshop on the production process of making short and long film documentaries. From digital cinema and the "screening" of classic and contemporary documentary aesthetic proposals will be developed and several individual and group documentaries will be filmed. The course will include preparation for the shoot, the relationship of the director and the production, the choice of media and objectives, the plan of shooting, editing, and the layout and mix of the soundtrack.

COMU 4035: RADIO AND TELEVISION PROGRAMMING, three (3) credits, three (3) contact hours per week. Introduction to fundamental concepts in the development and analysis of radio and television programming strategies. Study and analysis of media audiences to establish certain or specific genres and content preferences, markets, schedules and networks. Study of the various sources of production. Study of ethical and legal restrictions of radio and television programming. The course examines strategies to promote diversity in content and programming.

COMU 4041: ADVANCED TELEVISION AND RADIO PRODUCTION WORKSHOP, one (1) credit, one (1) contact hour per week. Co-requisite: COMU 4043: Laboratory of Advanced Television and Radio Production Workshop. The course is an advanced practice in the elaboration of television and radio programs from pre-production to post-production. The television and radio productions that are made in the course fall upon a conceptual frame where television and radio as communication media are part of social change in relation to culture and economy. Emphasis in creative aspects, decision-making and group work during television productions.

COMU 4043: LABORATORY OF ADVANCED TELEVISION AND RADIO PRODUCTION WORKSHOP, two (2) credits, five (5) contact hour per week. Intensive laboratory in the elaboration of television and radio programs from pre-production to post-production. The television and radio productions that are made in the course fall upon a conceptual frame where television and radio as communication media are part of social change in relation to culture and economy. Emphasis in creative aspects, decision-making and group work during television productions.

COMU 4055: PRINCIPLES OF JOURNALISM, WRITTEN NEWS FOR RADIO AND TELEVISION, three (3) credits, three (3) contact hours per week. This course offers students the opportunity to learn the modern techniques of writing news, articles of general interest, columns, editorials and everything related to information and journalism as a profession, and the social function it plays. Special interest will be given to the development of journalism in Puerto Rico.

COMU 4065: ADVERTISING AND PUBLIC RELATIONS CAMPAINGS, three (3) credits, three (3) contact hours per week. Advanced course in public relations and advertising where real campaigns will be developed for the diverse communications media. Strategies based on communication and marketing techniques will be established to emphasize research, planification, implementation and evaluation.

COMU 4075: COMMUNICATION SEMINAR, three (3) credits, three (3) hours contact hours per week. Pre-requisites: COMU 3043 & COMU 3211. Study of one or various topics related to the six areas of emphasis of the Tele-Radial and Communication Department: News, Strategic Communication. Multimedia, Digital Cinema, Digital Photography, and Production and Direction.

COMU 4131: DIGITAL FILMMAKING WORKSHOP, two (2) credits, two (2) contact hours per week. This course examines the filmmaking techniques, methods, resources and production stages to get to tell a story. Filming projects will be developed that allow students use their knowledge and forms of expression to cinematic works.

COMU 4133: LABORATORY OF DIGITAL FILMMAKING WORKSHOP, one (1) credit, three (3) contact hours of laboratory. This course applies the filmmaking techniques, methods, resources and production stages to get to tell a story. Filming projects will be developed that allow students use their knowledge and forms of expression to cinematic works.

COMU 4335: PRACTICUM / SEMINAR, three (3) credits, eight point five (8.5) contact hours. Three credits equivalent to 15 hours of seminar and 112 hours of supervised practice. This work will be done in professional institutions such as radio, television, advertising, photography, film and other. The student will stand in a position that will serve as an in-service training under the direct supervision of selected media personnel and the faculty in charge of the course.

COMU 4155: ADVANCED EDITING AND POST- PRODUCTION, three (3) credits, three (3) contact hours per week. This course will discuss and apply advanced techniques of editing and post-production of video with special effects for film, TV and Interactive Media. Use of animation tools, rendering and special effects in two and three dimensions, culminating in their integration with digital editing programs of video and post-production in finished productions.

PUCO 4086: ADVERTISING PHOTOGRAPHY, three (3) credits, three (3) contact hours per week. Theoretical and practical course on the basic elements of photography, the structure of the photographic camera, exposition, processing and printing on photographic paper. Emphasis will be given to publicity photographing.

OTHER ELECTIVE COURSES

COMU 3017: ADVERTISING COPYWRITING, three (3) credits, three (3) contact hours per week. The principal objective of this course is to familiarize students with basic configurations of the creative concept from its beginning to the final advertising copy. Students are exposed to basic creative rules that start with the definition of objectives and end with the presentation of the copy either for television, radio or print. Behavioral science influences are also discussed as part of the copywriting process.

COMU 3105: COMMUNICATIONS MEDIA MANAGEMENT, three (3) credits, three (3) contact hours per week. Pre-requisites: COMU 2038, PUCO 1005 and MERC 3115. The course aims to provide Telecommunications students with the required techniques to hold administrative positions in the mass communications media in Puerto Rico and outside the Island. It also aims to give the student the tools for establishing a communications enterprise.

COMU 3101: PHOTOGRAPHY FOR COMMUNICATION I, two (2) credits, two (2) contact hours per week. Co-requisite: COMU 3102. Basic course on the fundamentals of photography. It includes introduction to the history of photography, theory of light, behavior of sensitive materials, appropriate use of the camera and photographic equipment, basic methods and techniques of image design, development of esthetic appreciation of photographic creation and its application to new technologies.

COMU 3102: LABORATORY FOR PHOTOGRAPHY FOR COMMUNICATION I, one (1) credit, three (3) contact hours per week. Co-requisite: COMU 3101. Proper use of the camera and photographic equipment. Application of basic methods and techniques for creating photographic language and image domain. (Previous code is AGRA 1003).

COMU 4005: TELEVISION ADVERTISING, three (3) credits, three (3) contact hours per week: one hour of lecture and two hours of laboratory work. Pre-requisite: COMU 2041. Creative aspects of writing and producing commercials for television; pre and post production; cost control.

COMU 4006: RADIO ADVERTISING, three (3) credits, three (3) contact hours per week: one hour of lecture and two hours of laboratory work. Pre-requisites: COMU 2038, COMU 2042. Theory and practice of radio advertising, radio as an advertising tool, production of radio commercials. Analysis of radio advertising campaigns.

PUCO 4007: PRINCIPLES OF PUBLICITY, three (3) credits, three (3) contact hours per week. The course introduces students to the world of publicity and familiarizes them with the historical development and current impact of publicity within marketing, and the consumer society. The relation between publicity and the consumer is analyzed and the various elements of an advertisement and its effect on the purchasing behavior of the average consumer. Students become familiar with the various methods of disseminating the message and with the necessary considerations taken into account by the publicist when developing an effective media campaign. Students are exposed to the concept of a publicity campaign and the analysis of the elements required for a successful campaign. Finally, students become familiar with the various institutions that contribute to publicity.

EDUCATION DEPARTMENT

BACHELOR OF ARTS IN ELEMENTARY EDUCATION (0419)

MISSION

The Mission of the Department of Education of the University of Puerto Rico at Arecibo is to guarantee the development of an educational setting that encourages the construction of knowledge in the teacher candidate through significant learning experiences. This mission is congruent with the Mission of the University of Puerto Rico and the Mission of the University of Puerto Rico at Arecibo and responds to their three fundamental axes: learning, research and service. The faculty provides quality teaching that promotes the integral formation of the teacher candidates as citizens, professionals, reflective and critical researcher and transformer of their pedagogical practices in a variety of scenarios.

The Department aspires to promote respect for the plural ethical, moral and social values of a democratic society, as well as respect for and enrichment of our cultural patrimony as a legacy for future generations. **The Department is accredited by the Council for Accreditation of Educator Preparation (CAEP).**

VISION

At UPRA's Department of Education future educators are envisioned as reflective and critical researchers, who transform their educational practice, and who are able to create atmospheres that promote intellectual curiosity. Educators are perceived as individuals whose ethical, moral, aesthetic and social values are based on a humanist and constructivist foundation. Educators are seen as promoting the building of knowledge and showing respect for diversity.

OBJECTIVES

UPRA's Department of Education aims to meet the following goals to facilitate the well-rounded development of highly qualified teacher-candidates:

1. To prepare teacher-researcher candidates with the consciousness of having the primary responsibility for their own learning and who understand that learning is a continuous process.
2. To provide teacher-researcher candidates with the necessary knowledge and skills to search and handle information in pedagogical research in a variety of scenarios.
3. To train teacher-researcher candidates to perform as educators who know their field, and who are responsible and responsive to the educational needs of society.
4. To qualify teacher-researcher candidates who possess innovative assessment and evaluation techniques, that enable them to become agents of change in their educational practice.
5. To prepare teacher-researcher candidates who are capable of designing significant educational experiences and of integrating technology into the learning and teaching

experience.

6. To prepare teacher-researcher candidates with profound reflective ability, disposition, ethical and aesthetic values, and knowledge of self.
7. To prepare teacher-researcher candidates who are conscious and respectful of individual differences and different learning styles.
8. To develop teacher-researcher candidates with knowledge of general education with emphasis on oral and written communication skills in English and Spanish, quantitative and scientific reasoning skills, logical and critical thinking skills, collaborative work skills and historical and social knowledge.

COMPETENCIES OF THE TEACHER-CANDIDATE:

UPRA-DE teacher candidates exhibit the following competencies:

1. Knowledge and integration of the pedagogical and theoretical content in the development of critical thinking skills (K)
2. Ability to use and integrate technology and other educational resources (K, S)
3. Ability to be an active researcher in the development of critical thinking, problem solving, and performance skills (S)
4. Sensitivity to ethical and aesthetic aspects of human diversity (D)
5. Commitment to their professional development (D, S)
6. Skill in the use of their own language and other languages (S)
7. Creative leader of the learning environment (S, D)
8. Ability to integrate different non-traditional learning styles in the development of their courses (K,S,D)
9. Ability to foster relationships with school colleagues, parents and families, and agencies in the community (K,S,D)
10. Ability to design and implement assessment and evaluation techniques (K,S,D)

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3101	Basic Spanish I	3
INGL 3101 ⁵⁵	Basic English I	3
INGL 3113	Oral Practice I	0
HUMA 3101	Western Culture I	3
CISO 3121	Introduction to Social Science I	3
MATE 3131	Fundamental Concepts of Arithmetic and Algebra for Elementary School teachers	3
EDFU 3001	Human Growth and Development I	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
INGL 3102*	Basic English II	3
INGL 3114*	Oral Practice II	0
ESPA 3102	Basic Spanish II	3
HUMA 3102	Western Culture II	3
EDPE 3005	Children and their Language	3
MATE 3132	Fundamental Concepts of Geometry and Algebra for Elementary School teachers	3
EDFU 3002	Human Growth and Development II	3
TOTAL		18

⁵⁵ Students who score above 580 on the English language part of the College Board Examination will take INGL 3103-Intermediate English I and INGL 3104-Intermediate English II. This sequence does not require the oral practice laboratory.

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
EDFU 3017	Learning Assessment	3
EDFU 3007	Social Foundations of Education	3
EDPE 3031	Teaching Reading and Writing: K-3	3
EDPE 3011	The teaching of mathematics in grades K-3	3
CIIN 3001	Integrated science I	3
CIIN 3002	Integrated Science Laboratory	1
TEED 3025	Audiovisual Workshop	3
TOTAL		19

Second Semester		
CODE	DESCRIPTION	CREDITS
EDFU 4019	Philosophical Foundations of Education	3
EDPE 3129	Use of Microcomputers in Education	3
EDPE 3032	Teaching Reading and Writing: 4-6	3
EDPE 3097	Teaching Music	3
EDPE 3041	Teaching of Sciences in grades K-3	3
EDES 4006	Nature and Needs of the Exceptional Student	3
TOTAL		18

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
EDES 3006	Diagnostic and Correction of Deficiencies in Reading and Writing	3
EDPE 3006	The teaching of Social Studies in grades K -3	3
EDPE 4085	Seminar on Evaluation of Strategies and Pedagogical Research	1
CIIN 3003	Integrated Science II	3
CIIN 3004	Integrated Science Laboratory II	1
EDPE 3115	The teaching of Mathematics in grades 4-6	3
Elective		3
TOTAL		17

Second Semester		
CODE	DESCRIPTION	CREDITS
EDPE 3095	Art Education in Elementary School	3
EDPE 3116	Teaching of Sciences in grades 4-6	3
EDPE 3010	The teaching of Social Studies in grades 4-6	3
EDPE 4051	Seminar on Pedagogical Research I	1
CISO 3122	Introduction to Social Sciences II	3
INGL 3021	Oral and written English	3
Elective		3
TOTAL		19

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ESPA 4267	Puerto Rican Literature Compendium	3
EDPE 4052	Educational Research Seminar II	1
EDPE 4210	Teaching Physical Education in the Elementary School	3
EDPE 4335	Seminar Curriculum and Instruction in Elementary School	3
HIST 3241	History of Puerto Rico	3
Elective		3
TOTAL		16

Second Semester		
CODE	DESCRIPTION	CREDITS
EDPE 4340	Student Teaching at an Elementary School (4 to 6) OR	
EDPE 4025	Student Teaching K-3	6
HIST 3112	History of the United States	3
Elective		3
TOTAL		12
Total credits 137		

NOTES:

1. The Public Education Department requires a course on U.S. History, and another on the use of the computer in Education to certify the applicant. It is highly recommended that students of the program take at least one of these courses.
2. Curricular sequences are continuously revised. Students are encouraged to check with their departments to be informed of the latest revisions.

ELECTIVES

EDPE 3315	The Development of Reading/Writing during the Pre-School Years	3
EDES 4006	Seminar on the Characteristics and Needs of Handicapped Children	3
EDES 3009	Care of the Child in the Classroom	3
EDES 4050	Methods, Techniques and Materials Used in the Education of the Emotionally-Disturbed	3
EDPE 3317	Children's Literature	3
EDPE 4135	Theory and Methodology of Teaching Sciences in the Secondary School	3

**BACHELOR OF ARTS IN ELEMENTARY EDUCATION
WITH MAJOR IN PHYSICAL EDUCATION
FOR THE ELEMENTARY LEVEL⁵⁶
(0448)**

The mission of the Bachelor of Arts in Elementary Education with major in Physical Education for the Elementary Level is to provide highly qualified teaching personnel for the Puerto Rico Public and private school systems at the elementary K-3 and 4-6 levels. **The Department is accredited by the Council for Accreditation of Educator Preparation (CAEP).**

The teaching-learning process emphasizes the holistic development of the student who aspires to become an educator. It puts special emphasis on the development in the future teacher of the desirable habits, attitudes, skills, and abilities that promote the highest sense of responsibility, honesty and personal and professional values, regard for the activities of corporal movements and the scientific knowledge inherent to the teaching and practice of Physical Education at the elementary level.

GENERAL OBJECTIVES:

1. To enable teacher candidates to work at the elementary school level.
2. To provide candidates for teacher at the elementary school with the methods, non-traditional strategies and pedagogical procedures that will allow them to effectively carry out the teaching and learning process.
3. To develop in teacher candidates the competencies and skills of their specialization.
4. To provide through the various courses a broad program of activities varied and diverse that will enhance in teacher candidates the skills for participating in sports and for learning methods appropriate for teaching physical education.
5. To provide teacher candidates with leadership experiences in the school and the community.
6. To encourage the development of high self-esteem that will allow candidates to critically reflect on themselves as individuals and as professionals.

⁵⁶ Curricular sequences are continuously revised. Students are encouraged to check with their departments to be informed of the latest revisions.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3101	Basic Spanish I	3
INGL 3101 ⁵⁷	Basic English I	3
INGL 3113	Oral Practice I	0
CIBI 3001	Biological Sciences I	3
EDFU 3001	Human Growth and Development I	3
EDFI 3555	History and principles of Physical Education	3
EDFI 3076	Physical Conditioning	1
TOTAL		16

Second Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3102	Basic Spanish II	3
INGL 3102*	Basic English II	3
INGL 3114*	Oral Practice II	0
CIBI 3002	Biological Sciences II	3
EDFU 3002	Human Growth and Development II	3
EDFI 4156	Perceptual Motor Learning	2
CISO xxxx	Social Science Department	3
TOTAL		17

⁵⁷ Students who score above 580 on the English language part of the College Board Examination will take INGL 3103-Intermediate English I and INGL 3104-Intermediate English II. This sequence does not require the oral practice laboratory.

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3131	Fundamental Concepts of Arithmetic and Algebra for Teachers	3
EDFU 3007	Social Foundations of Education	3
EDFI 4159	Anatomy and Kinesiology	3
EDPE 3129	Use of Microcomputers in Education	3
INGL 3093	Conversational English	3
EDFI 3645	First aid	2
TOTAL		17

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3132	Fundamental Concepts of Probability and Statistics, Geometry for Elementary School Teachers	3
EDFU 4019	Philosophical Foundations of Education	3
EDFI 4167	Gymnastics, Dance and Efficiency in Elementary School	3
TEED 3025	Workshop in Audiovisual Education	3
EDFI 3096	Teaching Physical Education in grades K to 3	2
Elective	Student Election	2
Elective	Student Election	2
TOTAL		18

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
EDES 4006	Seminar on the Nature and Needs of the Exceptional Child	3
EDFI 4158	Swimming for the Elementary Level	2
EDFI 3097	Teaching Physical Education in 4-6	2
CIFI 3001	Introduction Physical Science	3
ESPA 3208	Writing and style	3
CISO xxxx	Social Science Department	3
TOTAL		16

Second Semester		
CODE	DESCRIPTION	CREDITS
EDFI 4168	Exercise Physiology with Laboratory	3
EDFI 3465	Staff and Community Health	3
EDFI 4155	Physical education for children with disabilities at the elementary level	3
EDFU 3205	Evaluation and Measurement Research at the Elementary Level	3
EDPE 4215	Theories and Methodologies of Teaching Physical Education in the Elementary School	3
Elective	Student Election	2
TOTAL		17

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
HUMA xxxx	Course Department of Humanities	3
EDFI 4165		3
EDPE 4485	Integration Seminar Teaching Physical Education in Elementary level	3
HIST 3241	History of Puerto Rico	3
Elective	Student Election	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
EDPE 4487	Student Teaching Physical Education	6
HIST 3112	History of the United States II	3
Elective	Student Election	3
TOTAL		12
Total credits 128		

ELECTIVES

CODE	DESCRIPTION	CREDITS
EDFI 3025	Elementary Volleyball	2
EDFI 3035	Elementary Basketball	2
EDFI 3075	Track and Field and Cross-Country	2
EDFI 3451	Tennis	2
EDFI 3106	Simple Games and Organized Sports Modified for the Elementary Schools	3
EDFI 3465	Personal and Community Health	3
EDFI 3645	First-Aid	2
EDFI 3441	Introduction to Swimming	2
EDFI 3076	Physical Conditioning	1

FACULTY

Andino Noguerras, Juan, M.A., *Assistant Professor*, Master of Arts in Physical Education, Scientific Analysis of Human Movement, Universidad Interamericana de Puerto Rico.

Colón Rodríguez, José C., Ph. D., *Assistant Professor*, Doctoral Candidate Philosophy with a Specialization in Teaching, Universidad Metropolitana, Cupey Campus

Gómez Marrero, Ana, M.A. Ed., *Professor*, Master of Arts in Education, Secondary Education, Universidad Interamericana de Puerto Rico.

Jiménez Estremera, José, Ed. D., M.A., *Assistant Professor*, Curriculum and Teaching, Pontifical Catholic University, Ponce Campus.

Laboy González, Brenda, Ed.D. *Associate Professor*, Doctorate in Counseling and Orientation, UPR-Río Piedras.

Laracunte Carreras, Luis, M.A. Ed., *Professor*, Master of Arts in Education, Physical Education, Universidad de Puerto Rico.

Martínez González, Ivette, Ed.D. *Professor*, Doctor of Education, Curriculum and Teaching, Universidad Interamericana de Puerto Rico.

Román Rodríguez, Ileana, Ed.D. Ed., *Assistant Professor*, Doctor of Administration Special Education, Universidad Interamericana de Puerto Rico, Recinto Metropolitano.

LIST OF COURSES

EDES

EDES 3006: DIAGNOSTIC AND TREATMENT OF READING AND WRITING DEFICIENCIES, three (3) credits, three (3) contact hours per week. Pre-requisite: EDPE 4006. Development of competencies necessary to teach, diagnose and correct reading and writing deficiencies including the cognitive, affective and psychomotor basis that characterize these learning processes. The study and analysis of children with reading and writing skills. Analysis of the reading and writing inventory models, diagnostic tests and other instruments used as guides for creating and using materials used in working with children with problems.

EDES 3009: CARE OF THE CHILD IN THE CLASSROOM, three (3) credits, three (3) contact hours per week. Pre-requisite: EDPE 4006. This course is offered to professors and regular students of the regional colleges. A discussion and analysis of the different methods used in dealing with children's behavior in the classroom. It emphasizes the teacher's role in dealing with students behavior so it conforms to the norms established for the classroom.

EDES 4006: SEMINAR ON THE CHARACTERISTICS AND NEEDS OF HANDICAPPED CHILDREN, three (3) credits, three (3) contact hours per week. This course is offered to second year students in education and to regular and special education teachers. An introductory course which familiarizes students with the handicapped population, their rights and the services offered to them. During the course students will become acquainted with: 1. the classification and diagnostic systems used in special education, 2. the different special education programs offered in Puerto Rico, 3. the organization and administration of special education programs in Puerto Rico, 4. resources (other than schools) that provide services to the handicapped children of Puerto Rico, 5. factors that influence the organization and provisions for special education services: Public Law 94-21, Law 2, and 6. the problems confronted by handicapped children in the school and in the community.

EDES 4049: CHARACTERISTIC AND NEEDS OF THE CHILD WITH SPECIFIC LEARNING DISABILITIES, three (3) credits, three (3) contact hours per week. Introductory course that discusses the theories on the origin of the specific disability, the characteristics present in children, the identification and referral to special education services.

EDES 4050: METHODS, TECHNIQUES AND MATERIALS USED IN THE EDUCATION OF THE EMOTIONALLY-DISTURBED, three (3) credits, three (3) contact hours per week. The study of the learning problems of the emotionally disturbed child and the analysis of the modern education approach (programs, techniques, materials, diagnosis, corrections) that is used in educating this child. Also studied is the role of the teacher and other professional personnel in identifying, diagnosing and educating emotionally-disturbed children and those with deviate conduct.

EDFI

EDFI 3025: ELEMENTARY VOLLEYBALL, two (2) credits, three (3) contact hours per week. This course provides students with the basic knowledge of the history, rules, technique and strategy of volleyball.

EDFI 3035: ELEMENTARY BASKETBALL, two (2) credits, three (3) contact hours per week. The teaching and development of the basic skills and techniques of basketball. A study of the history and the mental, physical and social advantages of practicing the sport.

EDFI 3075: TRACK AND FIELD AND CROSS-COUNTRY, two (2) credits, three (3) contact hours per week. The theoretical part of this course will cover the history, rules, terminology, scoring systems and the principles of the sports. The skills-training period will teach the correct techniques used in the twenty-one events.

EDFI 3076: PHYSICAL CONDITIONING, one (1) credit, two (2) contact hours of lecture and practice per week. This course emphasizes components for good physical aptitude.

EDFI 3090: PHYSICAL EDUCATION FOR PRE-SCHOOL LEVEL, three (3) credits, three contact hours per week. Fundamental aspects of psycho-motor, cognitive and affective development in children up to five years of age and their relation to and application in Physical Education with emphasis on the selection, organization and evaluation of movement activities at this level.

EDFI 3096: TEACHING OF PHYSICAL EDUCATION IN GRADES K-3, two (2) credits, three (3) contact hours per week. The course deals with curriculum, organization and planning of a Physical Education program for grades K-3. It includes the selection and practice of movement activities that contribute to the perceptual, motor, social, emotional and intellectual development of children in grades K-3.

EDFI 3097: TEACHING OF PHYSICAL EDUCATION IN GRADES 4-6, two (2) credits, three (3) contact hours per week. The course deals with curriculum, organization and planning of a Physical Education program for grades 4-6. It includes selection and practice of appropriate activities for the development of children. Also includes methods and techniques for teaching physical education in grades 4-6.

EDFI 3106: SIMPLE GAMES AND ORGANIZED SPORTS MODIFIED FOR THE ELEMENTARY SCHOOLS, three (3) credits, three (3) contact hours per week. Teaching and practice of simple games, modified activities and games as an introduction to sports at the elementary school level.

EDFI 3415: PERSONAL DEFENSE, two (2) credits, three (3) contact hours per week. The practice of simple methods used in personal defense. Familiarizes students with simple materials and preventive methods recommended in cases of emergency.

EDFI 3441: INTRODUCTION TO SWIMMING, two (2) credits, three (3) contact hours per week. This course aims to develop the basic movements in swimming and the methodology

used in teaching skills, the styles used in competition and during life-saving are discussed and practiced.

EDFI 3451: TENNIS, two (2) credits, three (3) contact hours per week. A study of the history, rules, facilities and game equipment. A practice of the basic skills such as forehand, backhand and serve.

EDFI 3452: INTERMEDIATE TENNIS, two (2) credits, three (3) contact hours per week. **Pre-requisite: EDFI 3451.** Teaches the intermediate skills of the game; offensive and defensive techniques and strategies; single and double games will be played.

EDFI 3465: PERSONAL AND COMMUNITY HEALTH, three (3) credits, three (3) contact hours per week. A study of the healthy lifestyle from an individual and community perspective with special emphasis on interpersonal relations. It includes exercises rest, nutrition, personal habits, hygiene, transmissible diseases, heredity, etc.

EDFI 3555: HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION, three (3) credits, three (3) contact hours per week. Historical study of physical education from its origins to the present. Study and interpretation of the basic principles of physical education programs.

EDFI 3645: FIRST-AID, two (2) credits, three (3) contact hours per week. How to care for wounds and simple injuries. Causes and prevention of accidents, along with adequate procedures for preventing and treating injuries.

EDFU

EDFU 3001: HUMAN GROWTH AND DEVELOPMENT I, three (3) credits, three (3) contact hours per week. This course helps future teachers understand the nature and scope of psychology as a basic for understanding the educational process. It introduces students to the concepts of growth and development of children and adolescents. It examines the biological and environmental forces that contribute to the development of a healthy personality.

EDFU 3002: HUMAN GROWTH AND DEVELOPMENT II, three (3) credits, three (3) contact hours per week. **Pre-requisite: EDFU 3001.** In this course students come in contact with the principles of psychology which explain the learning-teaching process and the conditions in each individual that affect this process. Part of the semester is dedicated to the study of the evaluation process; special attention is given to the principles that govern the creation of educational tests and student promotions.

EDFU 3007: SOCIAL FOUNDATIONS OF EDUCATION, three (3) credits, three (3) contact hours per week. Analysis of the social sciences and their relation to the education process. The analysis of the school as a social institution. This course includes the study of the cultural heritage of humanity and the role of education in preserving and improving it. Also studied: 1. the integration of education to community life and institutions., 2. group behavior in relation to school problems., 3. the social role of teachers, and 4. the relationship between social change and the school.

EDFU 3017: EVALUATION LEARNING PROCESS, three (3) credits, three (3) contact hours per week. Pre-requisite: EDFU 3002. Diagnose and improve instruction in the classroom by means of tests and other units of measure. Statistical techniques used in a study of I.G. and other tests prepared for classroom use.

EDFU 3205: EVALUATION AND INVESTIGATION OF PHYSICAL EDUCATION AT THE ELEMENTARY LEVEL, three (3) credits, three (3) contact hours per week. General and fundamental consideration of tests, introduction to procedures and analysis, uses and limitations of tests and evaluation, introduction to statistics, types of tests and instruments to measure physical education at the elementary level, assessment in physical education, etc.

EDFU 4019: PHILOSOPHICAL PRINCIPLES OF EDUCATION, three (3) credits, three (3) contact hours per week. A study of the relationship between philosophy and the practice of the teaching profession. An introduction to the basic problems in philosophy and their educational implications.

EDPE

EDPE 3005: CHILDREN AND THEIR LANGUAGE, three (3) credits, three (3) lecture hours per week. This course provides for the study of language development in the child within the philosophical, social and psycho-pedagogical perspectives. Emphasis is placed on acquiring basic concepts of language, complemented by clinical experiences. This course is designed for students majoring in preschool and primary education.

EDPE 3006: SOCIAL STUDIES IN THE ELEMENTARY SCHOOL, three (3) credits, three (3) lecture hours per week. The study, analysis and discussion of the new curriculum, methodology, approaches, goals and scope of the new social studies program in the elementary school. The course aims to train the future teacher in the new philosophy of the program that answers to the reality and needs of Puerto Rican society seen within the context of other countries and the basic concepts of the social science, cultural interaction, social groups, interdependency, democracy, conservation, production, distribution and consumption of resources.

EDPE 3095: TEACHING ART IN THE ELEMENTARY SCHOOL, three (3) credits, three (3) lecture hours per week. This course emphasizes the methods and materials that can be used in the classroom to develop in children the capacity of artistic expression in the field of the plastic arts in the first seven grades (K-6) of our school system. Special care will be taken in communicating the true meaning of art in general, so that the future teachers taking the course develop and enhance their own sensibility to art, and be capable to do the same with the children they will teach. To achieve its objectives the course will be divided into lecture, discussion and workshop time.

EDPE 3097: TEACHING MUSIC IN THE ELEMENTARY SCHOOL, three (3) credits, one (1) lecture hour and two (2) practice hours per week. Songs and musical games will be learned in a musically appropriate environment in the classroom. Some will be dramatized, and students will learn to play the recorder to obtain melodic and rhythmic expression; aural experiences they will observe the individual nature of the ideas involved in this process.

EDPE 3116: TEACHING SCIENCE IN THE ELEMENTARY SCHOOL, three (3) credits, three (3) lecture hours per week. The course identifies and analyzes the basic concepts of science that an elementary school teacher should have for an effective teaching. It will analyze guide, texts and programs of the Department of Public Education; it will also emphasize the planning of learning activities, the writing of performance objectives and teaching means.

EDPE 3129: USING THE COMPUTER IN THE CLASSROOM, three (3) credits, three (3) lecture hours per week. Introductory course dealing with the place of the microcomputer in the classroom. Special importance will be accorded to the uses of the computer in the school environment, available resources for the teacher, as well as the ways to integrate the computer in the teaching process. Class discussions will be complemented with experiences in the workshop and special assignments.

EDPE 3305: THE PRE-SCHOOL PROGRAM I, three (3) credits, three (3) lecture hours per week. The history, philosophy and theories that guide the educational perspectives at the pre-school level, considering several models of pre-school programs (Head Start and Montessori, among other). The characteristics of the pre-school child pertaining to his growth, development and education are studied. Observation of the Pre-School Laboratory at the UPR Bayamón Campus is required.

EDPE 3306: THE PRE-SCHOOL PROGRAM II, three (3) credits, three (3) lecture hours per week. The organization, study and analysis of the pre-school curriculum, covering such topics as the Language Arts, Mathematics, Sciences, Health, Creative Expression: Art, Music and Movement, the social studies, and the development of values for the cognitive, psychomotor and affective development of the pre-school child, besides developing and reinforcing its interaction.

EDPE 3308: EDUCATION OF PRE-SCHOOL AGE CHILDREN, three (3) credits, three (3) lecture hours per week. Study and analysis of the work of the pre-school teacher, his/her personal and professional characteristics, how these influence performance and the teaching/learning process of the child. A reference framework of educational methods, techniques and strategies, means of evaluation and their professional application to the different pre-school curricular areas is provided. Experiences in the teaching laboratory of educational sciences are required.

EDPE 3315: THE DEVELOPMENT OF READING/WRITING DURING THE PRE-SCHOOL YEARS, three (3) credits, three (3) lecture hours per week. Study of the nature of the linguistic process, of language as a tool for communication, and of reading and writing as developmental processes during the pre-school years. It guides the student to the analysis of the stages and principles of development and evolution of reading/writing at the pre-school level, and its implications in the educational process.

EDPE 3317: CHILDREN'S LITERATURE, three (3) credits, three (3) lecture hours per week. Pre-requisite: ESPA 3101, ESPA 3102, EDPE 3005, EDPE 9003. Study and analysis of children's literature, its characteristics, kinds that compose the methodology and appropriated techniques, in order for the child to acquire linguistic skills that help them express their thoughts and emotions with property and correction. Presents and discuss the models and strategies related to literature experiences for preschool and elementary school children. The application of those

models and strategies serve to encourage the pleasure, enjoyment and value of literature by young children.

EDPE 3326: RHYTHM AND MOVEMENT FOR DEVELOPMENT OF MOTOR PERCEPTION AT THE PRE-SCHOOL LEVEL, three (3) credits, three (3) lecture hours per week. The course will provide information related to the need, value, curricular concepts and contents necessary for teaching physical education at the pre-school level. Foundations, principles and sequences of the motor perception and physical development of pre-school children. The course includes the application of these concepts in a demonstration class.

EDPE 4025: TEACHING PRACTICE K-3, six (6) hours, fifteen (15) contact hours per week. Pre-requisite: EDPE 4335. This course offers the student varied experiences in the laboratory in which he/she observes, reflects, acts, reacts to and self-evaluates his/her reactions on the basis of the results obtained. Laboratories are held for three (3) hours daily, four (4) days a week, plus three (3) seminar hours one (1) day a week. Students will realize the work proper to practice in a minimum of thirteen (13) weeks during the course of the school semester, in a public school supervised by the Department of Education in coordination with the Department of Public Education.

EDPE 4051: PEDAGOGICAL RESEARCH SEMINAR I, one (1) credit, three (3) lecture hours per week. Pre-requisite: EDPE 4085. Consists of one hour (1) of lecture and two (2) hours of practice per week. After analyzing the teaching-learning process, students will develop their skills in preparing proposals and plans for educational research. As a result, they will prepare a proposal for research strategies related to the diagnosis, grouping and offering of different learning experiences.

EDPE 4052: PEDAGOGICAL RESEARCH SEMINAR II, one (1) credit, three (3) lecture hours per week. Pre-requisite: EDPE 4051. Consists of one (1) hour of lecture and two (2) hours of practice per week. As a result of the experiences during the first seminar, students will carry out an investigation on strategies selected to correct the difficulties diagnosed in elementary school groups.

EDPE 4085: SEMINAR ON THE EVALUATION OF PEDAGOGICAL STRATEGIES AND INNOVATIONS, one (1) credit, three (3) lecture hours per week. Pre-requisite: EDPE 2007. An evaluation of formal teaching practice. If forms part of a series of continuous experience and programs in which students will gradually participate. Students will analyze the strategies and innovations in order to use them in solving the difficulties found in the teaching-learning process. The seminar will meet in the classroom one hour per week. This will be complemented by two hours of clinical learning per week.

EDPE 4215: METHODOLOGY OF TEACHING PHYSICAL EDUCATION IN THE SECONDARY SCHOOL, three (3) credits, three (3) lecture hours per week. A theoretical-practical approach to the teaching/learning process. All aspects related to the teaching of the social science in the secondary level will be studied: planning, innovative education and curricular analysis, basic content in the area, preparing, adapting and using resources, methodologies and teaching techniques, and the fundamentals of testing and evaluation. Students must complete at least fifteen (15) hours of laboratory. These experiences will enable them to develop critical, dynamic and creative attitudes toward the solution of problems.

EDPE 4335: SEMINAR: CURRICULUM AND TEACHING IN THE ELEMENTARY SCHOOL, three (3) credits, three (3) lecture hours per week. Pre-requisites: EDFU 3002, 3007 and 3008. The course analyzes and discusses the implementation of the elementary school curriculum from K to 6. Special attention is given to the areas of writing operational objectives, the taxonomy of questions, individualized teaching, grouping students and the planning of learning activities.

EDPE 4340: TEACHING PRACTICE IN THE ELEMENTARY SCHOOL, six (6) credits, fifteen (15) contact hours per week. Pre-requisite: EDPE 4335. Participating students will teach three hours daily, five days a week for a semester, under the guidance and supervision of cooperating teachers and the supervisor of teaching practice. This teaching experience is enriched with lectures, demonstrations, guided observations, and the student's participation in all activities inherent to the work of an elementary school teacher in active service. (The student is assigned the practice in the grade of their preference from K to 6).

EDPE 4485: SEMINAR ON THE INTEGRATION OF TEACHING PHYSICAL EDUCATION: three (3) credits, three (3) seminar hours per week, and three (3) hours of experiences in the laboratories of Public School System or private schools. The course is designed for future teachers in the elementary school and also for teachers in service. It emphasizes the analysis and discussion of the basic principles underlying the educational practices and curriculum of physical education in the elementary school. Activities for the acquisition by the student of the skills and attitudes necessary for the programming and development of the teaching/learning process are provided. General techniques and specialization in terms of developing objectives, plans and evaluation of the educational experiences.

EDPE 4487: TEACHING PRACTICE OF PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL, six (6) credits, three (3) hours daily five (5) days a week. The student teachers participate in the process of teaching/learning during three (3) consecutive hours five (5) days a week for a semester in the public schools of Puerto Rico. They will be guided and supervised by their cooperating teachers and a supervisor of teaching practice in physical education. This experience is enriched with lectures, demonstrations, guided observations, and the student's participation in all activities inherent to the work of a teacher in active service.

TEED

TEED 3025: AUDIOVISUAL EDUCATION WORKSHOP, three (3) credits, one (1) hour weekly lecture and five (5) hours per week of workshop. Discusses the characteristics and advantages of the different audiovisual resources for teaching in the elementary school. This workshop systematically analyzes the communication process and the applicable learning theories. It develops basic skills in the preparation.

NURSING DEPARTMENT
BACHELOR OF SCIENCES IN NURSING
(0703)

The Bachelor of Sciences in Nursing prepares generalist nurses with the competencies and skills to offer bio-psycho-social care to clients, families and community groups. They will act as managing leaders of health care, counselors and defenders of clients' rights. Graduates from the program are qualified to work in Puerto Rico or the United States. They are also qualified to continue graduate studies in any area of specialty. This program is accredited by the Accreditation Commission for Education in Nursing (ACEN, <http://www.acenursing.org/>).

MISSION

Aims to transmit nursing knowledge which will enable our students to offer quality bio-social care to clients in different stages of growth and development, accomplished in part by integrating family and community groups, and by utilizing innovative technological tools, with an area of professional emphasis (nursing) and distance education. Aspires to transmit ethical, moral and spiritual values, which will provide students with sensitivity and a responsibility to social matters. Committed to stimulating students' critical thinking, analysis and research skills.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
<u>ESPA 3101</u>	Basic Spanish I	3
<u>CISO 3121</u>	Introduction to Social Sciences I	3
<u>INGL 3101</u> ⁵⁸	Basic English I	3
<u>INGL 3113</u>	Oral Practice I	0
<u>MATE 3035</u>	Health Related Mathematics	3
<u>BIOL 3008</u>	Basic Topics in Biology	3
TOTAL		15

⁵⁸ Students who score above 580 on the English language part of the College Board Examination will take INGL 3103-Intermediate English I and INGL 3104-Intermediate English II. This sequence does not require the oral practice laboratory.

Second Semester		
CODE	DESCRIPTION	CREDITS
<u>ESPA 3102</u>	Basic Spanish II	3
<u>CISO 3122</u>	Introduction to Social Sciences II	3
<u>INGL 3102</u>	Basic English II	3
<u>INGL 3114</u> ⁵⁹	Oral Practice	0
<u>BIOL 3741</u>	Human Anatomy and Physiology I	4
<u>BIOL 3743</u>	Lab. for Human Anatomy and Physiology	0
<u>QUIM 3051</u>	Principles of General and Organic Chemistry I	5
<u>QUIM 3052</u>	Laboratory for Principles of General and Organic Chemistry I	0
TOTAL		18

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
<u>CISO 3155</u>	Fundamentals of Statistical Reasoning	3
<u>ESPA 3208</u>	Writing and Style	3
<u>PSIC 3005</u>	General Psychology	3
<u>BIOL 3742</u>	Human Anatomy and Physiology II	4
<u>BIOL 3744</u>	Lab. for Human Anatomy and Physiology II	0
<u>INGL 3093</u>	Conversational English or INGL 3015 English for the Sciences and Technology	3
<u>ENFE 3100</u>	Nursing Assessment	2
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
<u>ENFE 3118</u>	Fundamentals of Nursing	6
<u>ENFE 3119</u>	Laboratory for Fundamentals of Nursing	0
<u>BIOL 2001</u>	Elementary Microbiology	4
<u>BIOL 2002</u>	Laboratory for Elementary Microbiology	0
<u>ENFE 3210</u>	Pharmacotherapy	3
<u>ENFE 4100</u>	Pathological Physiology	4
TOTAL		17

⁵⁹ It may be replaced by any Spanish General Education course listed on section General Education Program.

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
SICI 3028	Application Software	3
<u>ENFE 4107</u>	Nursing Intervention in Medicine and Surgery	6
<u>ENFE 4108</u>	Lab. for Nursing Intervention in Medicine and Surgery	0
<u>ENFE 4105</u>	Mental Health and Psychiatry	5
ENFE 4106	Lab. Mental Health and Psychiatry	0
<u>ENFE 4075</u>	Introduction to the Research Process	3
TOTAL		17

Second Semester		
CODE	DESCRIPTION	CREDITS
<u>ENFE 4208</u>	Family and Community Health	4
ENFE 4209	Lab. Family and Community Health	0
<u>ENFE 4109</u>	Normal and Complicated Pregnancy	5
ENFE 4110	Lab. Normal and Complicated Pregnancy	0
<u>ENFE 3215</u>	Nutrition and Diet Therapy	2
HUMA XX	General Education in Humanities ⁶⁰	3
XXXX	Free Elective Course	3
TOTAL		17

⁶⁰ General Education courses will be selected as identified from section General Education Program.

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
<u>ENFE 4206</u>	Pediatric Nursing	5
<u>ENFE 4207</u>	Lab. for Pediatric Nursing	0
<u>ENFE 4216</u>	Nursing Intervention with the Elderly Patient	4
<u>ENFE 4217</u>	Lab. for Nursing Intervention with the Elderly Patient	0
<u>HUMA XX</u>	General Education in Humanities***	3
<u>ENFE 4307</u>	Administration and Management of Nursing Services	3
	Free Elective Course	3
	TOTAL	18

Second Semester		
CODE	DESCRIPTION	CREDITS
<u>ENFE 4300</u>	The Role of Nursing	6
<u>ENFE 4306</u>	Contemporary Aspects of the Nursing Profession	2
	Two Free Electives Courses	6
	TOTAL	14

Total credits: 134

ELECTIVES

Code	DESCRIPTION
<u>ENFE 4400</u>	School Health
<u>ENFE 4495</u>	Nursing Intervention in the Intensive Coronary Unit
<u>ENFE 4405</u>	Industrial Nursing
<u>NURS 4406</u>	Legal Aspects of Nursing
<u>ENFE 4407</u>	Basic Skills in Health Preservation
<u>ENFE 4408</u>	Nursing in the Home and Hospice Health Systems
ENFE 3006	Educating the family of an alcoholic and a Drug Addict
ENFE 3116	Forensic Nursing
<u>ENFE 3105</u>	Sexual Education and the Nursing Process
<u>ENFE 3106</u>	Wellbeing and the Nursing Process
<u>ENFE 3109</u>	The Pregnant Family and its Educational Process
<u>ENFE 3115</u>	Educating the Elderly Family

NURSING DEPARTMENT
BACHELOR OF SCIENCES IN NURSING
NEW SEQUENCE CURRICULUM 2019
(0703)

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
<u>ESPA 3101</u>	Basic Spanish I	3
<u>CISO 3121</u>	Introduction to Social Sciences I	3
<u>INGL 3101</u> ⁶¹	Basic English I	3
<u>INGL 3113</u>	Oral Practice I	0
<u>MATE 3035</u>	Health Related Mathematics	3
<u>BIOL 3008</u>	Basic Topics in Biology	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
<u>ESPA 3102</u>	Basic Spanish II	3
<u>*HUMA</u>	General Education in Humanities ⁶²	3
<u>INGL 3102</u>	Basic English II	3
<u>INGL 3114</u> ⁶³	Oral Practice	0
<u>BIOL 3741</u>	Human Anatomy and Physiology I	4
<u>BIOL 3743</u>	Lab. for Human Anatomy and Physiology	0
<u>QUIM 3051</u>	Principles of General and Organic Chemistry I	5
<u>QUIM 3052</u>	Laboratory for Principles of General and Organic Chemistry I	0
TOTAL		18

⁶¹ Students who score above 580 on the English language part of the College Board Examination will take INGL 3103-Intermediate English I and INGL 3104-Intermediate English II. This sequence does not require the oral practice laboratory.

⁶² General Education courses will be selected as identified from section General Education Program.

⁶³ It may be replaced by any Spanish General Education course listed on section General Education Program.

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CISO 3155	Fundamentals of Statistical Reasoning	3
ESPA 3208	Writing and Style	3
<u>PSIC 3005</u>	General Psychology	3
<u>BIOL 3742</u>	Human Anatomy and Physiology II	4
<u>BIOL 3744</u>	Lab. for Human Anatomy and Physiology II	0
INGL 3093	Conversational English or INGL 3015 English for the Sciences and Technology	3
<u>ENFE 3100</u>	Nursing Assessment	2
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
<u>ENFE 3118</u>	Fundamentals of Nursing	6
<u>ENFE 3119</u>	Laboratory for Fundamentals of Nursing	0
<u>BIOL 2001</u>	Elementary Microbiology	4
<u>BIOL 2002</u>	Laboratory for Elementary Microbiology	0
<u>ENFE 3210</u>	Pharmacotherapy	3
<u>ENFE 4100</u>	Pathological Physiology	4
TOTAL		17

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ENFE 4220	Nursing Informatics	3
<u>ENFE 4107</u>	Nursing Intervention in Medicine and Surgery	6
<u>ENFE 4108</u>	Lab. for Nursing Intervention in Medicine and Surgery	0
<u>ENFE 4105</u>	Mental Health and Psychiatry	5
ENFE 4106	Lab. Mental Health and Psychiatry	0
<u>ENFE 4075</u>	Introduction to the Research Process	3
TOTAL		17

Second Semester		
CODE	DESCRIPTION	CREDITS
<u>ENFE 4208</u>	Family and Community Health	4
ENFE 4209	Lab. Family and Community Health	0
<u>ENFE 4109</u>	Normal and Complicated Pregnancy	5
ENFE 4110	Lab. Normal and Complicated Pregnancy	0
<u>ENFE 3215</u>	Nutrition and Diet Therapy	2

*HUMA	General Education in Humanities ⁶⁴	3
	Free Elective Course	3
	TOTAL	17

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
<u>ENFE 4206</u>	Pediatric Nursing	5
<u>ENFE 4207</u>	Lab. for Pediatric Nursing	0
<u>ENFE 4216</u>	Nursing Intervention with the Elderly Patient	4
<u>ENFE 4217</u>	Lab. for Nursing Intervention with the Elderly Patient	0
<u>ENFE 4307</u>	Administration and Management of Nursing Services	3
	Free Elective Course	3
	TOTAL	15

Second Semester		
CODE	DESCRIPTION	CREDITS
<u>ENFE 4301</u>	The Role of Nursing I	2
<u>ENFE 4302</u>	The Role of Nursing II	2
<u>ENFE 4306</u>	Contemporary Aspects of the Nursing Profession	2
<u>ENFE 4495</u>	Nursing Intervention in the Intensive Coronary Unit	3
	Free Electives Courses	6
	TOTAL	15

Total credits: 132

⁶⁴ General Education courses will be selected as identified from section General Education Program.

**NURSING DEPARTMENT
OPTIONAL MINOR CONCENTRATION IN PATIENT CARE IN CRITICAL
STATUS**

The Department of Nursing has developed a Minor Concentration in Patient Care in Critical Status, which provides the student with an alternative to develop competencies in the area of critical care. He can take his twelve elective credits in a Minor Concentration. The alternative is optional for students of the Bachelor of Science in Nursing Program in accordance with the 69-2013-2014 Certification of the Governing Board of the University of Puerto Rico and the Guide for the Implementation of Minor Concentration Policy at the University from Puerto Rico. The student who selects this concentration must request it in the third year of his program and make the request in the Registrar's Office.

CODE	DESCRIPTION	CREDITS
ENFE 4310	Fundamentals of Nursing Care of the Patient in Critical Status	3
ENFE 4311	Nursing Care of the Patient in Critical Status I	3
ENFE 4312	Nursing Care of the Patient in Critical Status II	3
ENFE 4313	Nursing Care of the Patient in Critical Status III	3
TOTAL		12

ELECTIVES

Code	DESCRIPTION
ENFE 4400	School Health
ENFE 4310	Fundamentals of Nursing Care of the Patient in Critical Status
ENFE 4311	Nursing Care of the Patient in Critical Status I
ENFE 4312	Nursing Care of the Patient in Critical Status II
ENFE 4313	Nursing Care of the Patient in Critical Status III
ENFE 4408	Nursing in the Home and Hospice Health Systems
ENFE 3006	Educating the family of an alcoholic and a Drug Addict
ENFE 3116	Forensic Nursing
ENFE 3105	Sexual Education and the Nursing Process
ENFE 3106	Wellbeing and the Nursing Process
ENFE 3109	The Pregnant Family and its Educational Process
ENFE 3115	Educating the Elderly Family

FACULTY

Acevedo Ramos, José, M.S.C., C.N.S., DNP. *Professor*, Master of Nursing Sciences, Clinical Specialist, University of Northeastern; Doctoral in Nursing, Clinical Specialist, Case Western Reserve University, Certificated in Genetic.

Chaparro Irizarry, Glenda, M.S.N., C.N.S., Ph.D.(s), *Instructor*, Master of Nursing Sciences, Neonatal- Pediatric Nursing. Role Education, Caribbean University. Students Doctoral of Philosophy in Education.

Corchado Cruz, Jorge, M.S.N., C.N.S., Ph. D. *Professor*, Master of Sciences Nursing, Medicine and Surgery, Role Education, Critical Care, Pontifical Catholic University of Puerto Rico. Doctor of Philosophy in Nursing, Widener University.

González Cortés, Mayda, M.S.N., C.N.S., *Professor*, Master of Sciences Nursing, Mental Health and Psychology, Rol Administration, Pontifical Catholic University of Puerto Rico.

Hernández Ramírez, Madeline, M.S.N., C.N.S., Ph.D. *Assistant Professor*, Master of Science Nursing, Medicine and Surgery, Role Education, Role Administration, Critical Care, Pontifical Catholic University of Puerto Rico. Doctor of Philosophy in Nursing, UMASS University, Massachusetts.

Jiménez Carrión, Raúl, M.S.N., C.N.S., Psy.D., *Assistant Professor*, Master of Science Nursing, Mental Health and Psychiatry, Role Education, Pontifical University of Puerto Rico. Doctor of Clinical Psychology, Pontifical Catholic University of Puerto Rico.

Jiménez Rosario, Nancy, M.S.N., C.N.S., Dr.Ph., *Professor*, Master of Sciences Nursing, Occupational Health, Universidad del Sagrado Corazón; Master of Science Nursing, Medicine and Surgery, Role Education, Critical Care, Role Education, Pontifical Catholic University of Puerto Rico. Doctor in Health Public. School of Medicine, Ponce, Puerto Rico.

López Forty, Migdalia, M.S.N., C.N.S., *Associate Professor*, Master of Nursing Sciences, Family and Community, Role Education, University of Puerto Rico, Medicals Science Campus, Certificated in Genetic.

Reyes Pérez, David, M.S.N., C.N.S., Ed. D., DMT-A, *Professor*, Master of Sciences Nursing, Medicine and Surgery, Role Education, Critical Care, Pontifical Catholic University of Puerto Rico. Doctor of Education, Curriculum and Instructions, Inter American University of Puerto Rico. Certificated in Hyperbaric Chamber.

Santiago Santiago, Luz, M.S.N., C.N.S., Ph.D.(s), *Associate Professor*, Master of Nursing Sciences, Family and Community, Adult and Critical Care, Role Education, University of Puerto Rico, Medicals Science Campus. Students Doctoral in Research in Education, UNINI.

Tapia Maldonado, Lourdes, M.S.N., C.N.S., *Professor*, Master of Nursing Sciences, Medicine and Family, Role Education, University of Puerto Rico, Medicals Science Campus.

Torres Pabon, Suheil, MPH, DNP., Instructor, Master of Public Health, Midwifery Nursing. University of Puerto Rico, Medicals Science Campus. Doctor of Nursing Practice, Kaiser University.

Valencia Cabrera, Carmen G., M.S.N., C.N.S., *Professor*, Master of Nursing Sciences, Mothers and Children, Role Administration, University of Puerto Rico, Medicals Science Campus.

LIST OF COURSES

ENFE 3100: NURSING ASSESSMENT, two (2) credits, six (6) laboratory hours per week. Pre-requisite: BIOL 3741-3743, QUIM 3051-3052. In this course, students are introduced to the nursing process, emphasizing the phase of assessment of the human being and family by means of a previously designed instrument. It includes the communication and interview techniques with emphasis on the physiological, psychological, social and spiritual aspects of the individual and the family. Students learn to assess deficiencies in the needs for SOF universal care, development and health deviation. Furthermore, the course helps students develop their skills in administering physical exams to healthy individuals, evaluating each of the systems of the human body.

ENFE 3105: SEXUAL EDUCATION AND THE NURSING PROCESS, three (3) credits, three (3) contact hours a week. Includes the anatomy and physiology of the human reproductive system, male and female; the development of pregnancy, family planning, marriage and divorce, and the last tendencies in the field of sexology.

ENFE 3106: WELLBEING AND THE NURSING PROCESS, two (2) credits. Introduction to the art of adequately using leisure periods, and its importance in the physical, mental, Social and emotional of the individual. Nursing students have the opportunity to apply the principles discussed in the nursing process.

ENFE 3109: FAMILY, PREGNANCY AND THE EDUCATIONAL PROCESS: three (3) credits, three (3) contact hours per week. Study of the development of pregnancy from fertilization until puerperium. It includes theories of learning, the role of the father and psychoprophilatic birth.

ENFE 3115: EDUCATION OF THE ADVANCED AGED ADULT FAMILY: three (3) credits, three (3) contact hours per week. Detailed study of older adults, with emphasis on their educational process, and their physical, mental, emotional and spiritual needs. It includes the most recent findings in this field.

ENFE 3116: Forensic Nursing three (3) credits, three (3) contact hours per week.

This course includes essential aspects of forensic nursing including the role of the nurses with rape victims from a bio-psycho-social intervention as well as the conviction process of the aggressor. The student exposes itself to the initial intervention with the victim, forensic interview and compilation of medical- legal evidence. In addition, one becomes familiar with the suitable methods of report of cases, documentation and how to testify in court in the in case of sexual aggression. The handling of a violation victim and the laws are discussed to the legal aspects in that represent this crime. Finally include the excellent aspects to obtain the certification like professional of S.A.N.E Nursing. (Sexual Assault Nurse Examiner)

ENFE 3118: FUNDAMENTALS OF NURSING and ENFE 3119: FUNDAMENTALS OF NURSING LAB, six (6) credits, four (4) hours of lecture and six (6) hours of laboratory per week. Pre-requisites: BIOL 3741-3743, QUIM 3051-3052, ENFE 3100, PSIC 3005. In this course, students are introduced to the theory of self-care. Students visualize the human being as an individual within a society and a culture with universal needs of self-care, deviation from

development and health deviation, complex and at the level of secondary intervention. Students are initiated into the role of self-care provider in partially compensatory system, the role of educator, counselor, and client and family advocate. They learn to recognize the legal aspects that affect the nursing profession, and the legal and ethical considerations when providing care. In the clinical laboratory, students learn the basic nursing skills which will guide them as agents of self-care and in their independent and interdependent functions.

ENFE 3210: PHARMACOTHERAPY, three (3) credits, three (3) contact hours per week. Pre-requisites: QUIM 3051-3052, MATE 3035. This course introduces students to the field of pharmacology which includes such topics as dilution, medication preparation and domestication. It includes an examination of the pharmacodynamics of medication in pediatric, adult and elderly clients. The course includes a discussion of the conversion system, drug calculation, oral, parenteral and topical administration of medication. Students utilize findings from pharmacological research and emphasize the role of the nursing professional in the management and administration of medication, considering the ethical, moral and legal aspects.

ENFE 3215: NUTRITION AND DIET THERAPY, two (2) credits, two (2) contact hours per week. Pre-requisites: QUIM 3051-3052. This theoretical course deals with nutrition as an essential element in nursing care. Students learn the components of a balanced diet. It includes estimates and analysis of dietary needs of individuals in various stages of development, and specific diets in health deviations.

ENFE 4075: INTRODUCTION TO THE RESEARCH PROCESS, three (3) credits, three (3) contact hours. Pre-requisite: CISO 3155, MATE 3035 This course is designed to guide the student in applying the research principles for the promotion, restoration and maintenance of health. It includes two phases: in the first one, students receive the cognitive data about the historical evolution of research. Emphasis is given to problem-solving skills to help students visualize the steps followed in designing a study. Ethical, moral and legal issues for the researcher and the client are considered. Furthermore, the various designs or approaches to research are described. During the second phase, students are introduced to the reading of research extracts. They use critical thinking and logic to perform their analysis. Also, they apply the principles of electronic data processing which will facilitate their analytical process.

ENFE 4310: FUNDAMENTALS OF NURSING CARE OF THE PATIENT IN CRITICAL STATUS, three (3) credits, three (3) contact hours. Pre-requisite: ENFE 4107, ENFE 2043 This course provides fundamental concepts about the nursing process of clients in critical care settings. The use of theory, critical thinking and evidence-based practice is accentuated. The experience of the client and the family in an environment of critical illness is studied. The critically ill patient estimate, psychosocial concepts and ethical-legal problems of critical care practice are studied.

ENFE 4311: NURSING CARE OF THE PATIENT IN CRITICAL STATUS I, three (3) credits, three (3) contact hours. Pre-requisite: ENFE 4XXX This course focuses on the care of critical clients with complex alterations in different systems. The common cardiovascular, respiratory, renal and neurological conditions will be explored, recognizing the clinical significance to anticipate nursing and medical interventions. The etiology, pathophysiology and related diagnosis, and current trends in collaborative care will be studied to provide a solid knowledge base to provide safe and competent care.

ENFE 4312: NURSING CARE OF THE PATIENT IN CRITICAL STATUS II, three (3) credits, three (3) contact hours. Pre-requisite: ENFE 4XXX This course focuses on the care of critical clients with complex alterations in different systems. Gastrointestinal, endocrine, hematological and immune conditions, common multisystemic and tegumentary alterations will be explored, recognizing the clinical significance to anticipate nursing and medical interventions. The etiology, pathophysiology and related diagnosis and current trends in collaborative care will be studied to provide a solid knowledge base to provide safe and competent care.

ENFE 4313: NURSING CARE OF THE PATIENT IN CRITICAL STATUS III, three (3) credits, three (3) contact hours. Pre-requisite: ENFE 4XXX This course focuses on the advanced care of critical clients with complex alterations in different systems. Advanced concepts of critical care will be explored recognizing the clinical significance to anticipate nursing and medical interventions. The concepts also include the technology used in the area of critical care such as hemodynamics control, ECG and heart rate, cardiac dysrhythmias, management of advanced areas, mechanical ventilation and ACLS. The management of the special population is also explored: obstetric, pediatric, elderly and trauma patients.

ENFE 4100: PATHOPHYSIOLOGY, four (4) credits, four (4) contact hours per week. Pre-requisites: BIOL 3741-3743, 3742-3744, QUIM 3051-3052, ENFE 3100. Students are exposed to the basic concepts of human pathophysiology in adult deviation from health. Course content is based on physiological deviations, signs, symptoms, physical findings and laboratory results which result from disease. Students use this knowledge to formulate the nursing diagnosis. The course is designed in such a way as to allow students to integrate the knowledge obtained from other disciplines about the normal and pathological functioning of the organism.

ENFE 4105: MENTAL HEALTH AND PSYCHIATRY and ENFE 4106: MENTAL HEALTH AND PSYCHIATRY LAB, five (5) credits, three (3) hours of lecture and six (6) hours of laboratory per week. Pre-requisite: ENFE 3100, ENFE 3118-3119, ENFE 4100, ENFE 3210, PSIC 3005. This course provides students with the knowledge of historical, ethical, moral, legal and social aspects of mental health. Recent developments in techniques of therapeutic communication in various stages of growth are analyzed. The course allows students to explore the study and application of the principles of promotion, restoration and maintenance of mental health in individuals and in groups according in the three stages of care. Personality theories and self-care are used to explain the human being's psychosocial dynamics. Students learn to identify existing psychosocial deviations, and to place clients in the health care continuum, determining the factors that promote mental health and those that predispose clients to health deviation. Topics include neurosis, schizophrenia, affective disorders, personality disorders, alcoholism, drug addiction, suicide, psychosexual and organic disorders, psychosocial approach to the AIDS patient, rape, child abuse, domestic violence and abuse of the elderly. Students use their critical thinking skills to estimate, diagnose, plan and evaluate care for the mental patient.

ENFE 4107: NURSING INTERVENTION IN MEDICINE AND SURGERY and ENFE 4108: NURSING INTERVENTION IN MEDICINE AND SURGERY LAB, six (6) credits, three and one half (3.5) hours of lecture and seven and one half (7.5) hours of laboratory per week. Pre-requisite: ENFE 3100, ENFE 3118-3119, ENFE 3210, ENFE 4100, ENFE 2001-2002, BIOL3741-3743, BIOL3742-3744, QUIM 3051-3052. The course introduces students to the knowledge and skills for nursing intervention with adult clients who experience deviation from the most common universal requirements (nutrition, elimination, rest, protection, security, oxygenation sexual satisfaction and development). The nursing process is used in its entirety as a method for problem-solving with emphasis on the validation of diagnosis through significant clinical data and evaluation of care given. Students use therapeutic communication techniques for gathering data. Students make critical evaluations to determine the clients' health needs. Nursing intervention is directed towards promotion, restoration and maintenance of health in collaboration with patients, their family and the interdisciplinary team. Students apply the ethical, moral and legal guidelines when dealing with adult clients in health deviation. Students use the findings of their research when providing nursing care in totally compensatory, partially compensatory and educational support systems.

ENFE 4109: NORMAL AND COMPLICATED PREGNANCY and ENFE 4110: NORMAL AND COMPLICATED PREGNANCY LAB, five (5) credits, three (3) hours of lecture and six (6) hours of laboratory per week. Pre-requisite: BIOL 3008, BIOL 3741-3743, BIOL 3742-3744, ENFE 3100, ENFE 3118, ENFE 4107, ENFE 4108. In this course students are exposed to bio-physiological, psychological, social and spiritual aspects of the expectant mother and her family. It deals with the care of the pregnant woman at the pre-natal, birth and puerperal stages and care of the newborn, both in normal and high risk situations. Emphasis is given to promotion, restoration and maintenance of health taking into account ethical, moral and legal aspects of the pregnant mother in a family context. Students develop and implement nursing care using therapeutic consideration and taking into account the client's educational needs for primary, secondary and tertiary intervention. Findings from research are used to provide students with innovative knowledge to care for the expectant mother and the newborn. The nursing process is used, with emphasis on diagnosis, planning and intervention in caring for the client, the family and dealing with the interdisciplinary team.

ENFE 4206: PEDIATRIC NURSING and ENFE 4207: PEDIATRIC NURSING I LAB six (6) credits, three (3) hours of lecture and six (6) hours of laboratory per week. Pre-requisite: BIOL 3008, BIOL 3741-3743, BIOL 3742-3744, ENFE 3100, ENFE 3118-3119, ENFE 4107-4108. This course discusses factors associated with growth and development and how they affect children and adolescents in their universal requirements and health deviation. Students use the nursing process to intervene with children and adolescents with health deviations in various health care systems. The concepts of health promotion, maintenance, rehabilitation and disease prevention are integrated. Furthermore, emphasis is given to ethical, moral and legal responsibilities when intervening with clients in this stage of growth and development. Findings from research are utilized to provide innovative care to this heterogeneous group.

ENFE 4208: FAMILY AND COMMUNITY HEALTH and ENFE 4209: FAMILY AND COMMUNITY HEALTH LAB, four (4) credits, two (2) contact hours six (6) hours of laboratory per week and. Pre-requisite: ENFE 3100, ENFE 3118-3119, ENFE 4107-4108, ENFE 3210, ENFE 4105 – 4106, ENFE 4075, CISO 3155. This course is designed to help students explore and apply principles for the promotion, restoration of health, and the prevention of disease in individuals, families or communities. Emphasis is given to the educational support system, and the role as patient counselor and advocate. Students examine ethical and moral principles and factors that influence health or health deviation in a community, using the nursing process. Epidemiological and bio-statistical concepts are used to identify health deviation in community groups. Students use critical thinking skills in developing research projects that contribute to manage various community groups. Students learn to identify family dynamics and promote self-care. Students are introduced to knowledge about legislative programs and political processes that affect health services. Also, levels of care are visualized, with emphasis on primary care with the goal of helping students recognize public health as a preventive dimension in nursing care.

ENFE 4216: NURSING INTERVENTION WITH THE OLDER PATIENT and ENFE 4217: NURSING INTERVENTION WITH THE OLDER PATIENT LAB,, four (4) credits, two (2) hours of lecture and six (6) hours of laboratory per week. Co-requisite: ENFE 4217. Pre-requisites: ENFE 3210, ENFE 3215, ENFE 3118, ENFE 4100, ENFE 4107. This course develops the necessary skills for caring for older patients. Students will discuss demographics growth of this age group, their lifestyle, and theories of the aging process, biological, psychological, social and spiritual changes associated with this stage of development. Also discussed are diseases and conditions proper to aging, as well as the process of dying. Students are prepared to develop self-care among elderly patients, emphasizing education for health promotion.

ENFE 4220: NURSING INFORMATICS, three (3) credits, three (3) contact hours per week. Pre-requisite: ENFE 3118. This course provides an exposition to the use and management of computer science related to the field of nursing, among them: electronic health record (EHR), clinical simulation, neuroscience, mobile applications, teleconsulting and robotics in nursing. The benefits of computer science are examined: EHR applied to nursing care documentation, used mobile application and robotics, then ten study guides are used in the DEFEDÉ electronic platform, thus providing the student with the theoretical concepts for a practical understanding in a simulated scenario. This course can be offered in both traditional and distance learning education modalities.

ENFE 4300: ROLE OF NURSING, six (6) credits, two (2) hours seminar and sixteen (16) hours of laboratory per week. Pre-requisite: All previous nursing courses. This course is designed so students may integrate all the knowledge acquired in a particular area of interest. Students will develop as leaders and have indirect contact with the instructors. Students will be responsible for their own learning by choosing experiences that will complement their professional development. Problems and questions which arise during clinical practice will be discussed during the seminar meetings. **(THIS COURSE IS ELIMINATED IN THE NEW SEQUENCE CURRICULUM 2019).**

ENFE 4301: ROLE OF NURSING I, two (2) credits, six (6) hours of laboratory per week. Pre-requisite: ENFE 3100, ENFE 3118, ENFE 3210, ENFE 4100, ENFE 4105, ENFE 4107, ENFE 4075, ENFE 4208, ENFE 4109, ENFE 3215, ENFE 4216, ENFE 4307. This course is designed for the students to integrate all the knowledge acquired in an area of interest. The student will develop as a leader and will have indirect supervision of the teacher. He will be responsible for his learning by choosing the experiences that will complete his professional development in the areas of maternity, pediatrics, and mental health. It will apply the nursing process, clinical judgment and problem-solving skills, by offering care to the individual. During the seminar he discusses the problem and concerns they face in clinical practice and seeks alternatives for their solution.

ENFE 4302: ROLE OF NURSING II, two (2) credits, six (6) hours of laboratory per week. Pre-requisite: ENFE 3100, ENFE 3118, ENFE 3210, ENFE 4100, ENFE 4105, ENFE 4107, ENFE 4075, ENFE 4208, ENFE 4109, ENFE 3215, ENFE 4216, ENFE 4307. This course is designed for the students to integrate all the knowledge acquired in an area of interest. The student will develop as a leader and will have indirect supervision of the teacher. He will be responsible for his learning by choosing the experiences that will complete his professional development in the areas of critical care, oncology, operation room and emergency room. It will apply the nursing process, clinical judgment and problem-solving skills, by offering care to the individual. During the seminar he discusses the problem and concerns they face in clinical practice and seeks alternatives for their solution.

ENFE 4306: CONTEMPORARY ASPECTS OF NURSING, two (2) credits, two (2) contact hours per week. Pre-requisite: ENFE 4105, ENFE 4107, ENFE 4075, ENFE 4109. This course analyzes nursing as a profession. It includes a discussion of the most relevant professional tendencies of the profession in Puerto Rico and the United States. Topics such as professional image, legal and ethical issues, the influence of politics on nursing are discussed. The course also includes a discussion of professional organizations in Puerto Rico and the US, their policies and their regulations. It also includes an overview of the Code of Ethics and professional standards that regulate the nursing profession in Puerto Rico. The course analyzes the responsibility of the nursing professional within the independent role described by the laws that regulate the profession in Puerto Rico.

ENFE 4307: ADMINISTRATION AND MANAGEMENT OF NURSING SERVICES, three (3) credits, three (3) contact hours per week. Pre-requisite: ENFE 4105, ENFE 4107, ENFE 4075, ENFE 4109. This course initiates students in the management responsibilities of the expanded role of nursing, taking into account independent practice. The course presents an analysis the various leadership roles, basic knowledge of evaluation of human resources and patterns of task assignment in a hospital environment. Students are led to value the legal responsibilities both from the perspective of a nursing professional as well as from the consumer of health services, personnel laws, labor relations, and job safety and health related issues. The course includes administrative theory, theory of change, with a main focus on the concepts of leadership and agent of change in the interdisciplinary team. Students are introduced to budget preparation skills.

ENFE 4400: SCHOOL HEALTH, three (3) credits, three (3) contact hours per week. Students learn about health promotion and maintenance in their role as school nurses. Emphasis is given to health estimate and the identification of cases through data obtained from school dossiers, results from screening tests, teacher and family observations. Students become familiar with the handling of minor illnesses in school children and with vaccination. They work in collaboration with the health and education team to coordinate follow up on children. Legal aspects of school nursing are discussed.

ENFE 4405: INDUSTRIAL NURSING, three (3) credits, three (3) contact hours per week. This course teaches students intervention and accident prevention skills for industrial areas. Emphasis is given to the health estimate and the identification of cases through data gathered from employee records, screening tests, and physical exam techniques. Emphasis is given to employment health and safety legislation and techniques of teaching-learning for adults.

ENFE 4406: LEGAL ASPECTS OF NURSING, three (3) credits, three (3) contact hours per week. This course deals with which affect the health professions. It prepares students to intervene in judicial proceedings. Students identify their legal responsibility with the profession, their clients and their families.

ENFE 4407: BASIC SKILLS IN HEALTH PRESERVATION, three (3) credits, four (4) contact hours per week. This course helps students become able to keep their own health and to contribute to the health of their families and communities. It includes basic nursing techniques, intervention in daily emergencies, and first aid for burns, poisoning and natural disasters.

ENFE 4408: NURSING IN HEALTH SYSTEMS IN HOMES AND HOSPICES, three (3) credits, three (3) hours contact per week. This course is designed to teach students about health care in homes and hospices. It includes topics relating to Medicare, eligibility requirements, quality of services, supervision, interdisciplinary team management and internal organization, among others.

ENFE 4495: NURSING INTERVENTION IN THE CORONARY INTENSIVE CARE UNIT, three (3) credits, three (3) contact hours per week. Pre-requisite: Basic CPR and ENFE 4107. This course provides students with basic knowledge of electrocardiography, identification, treatment, arterial and ventricular arrhythmias, and advanced cardiopulmonary resuscitation techniques. It prepares students to intervene with patients in the coronary intensive unit by identifying the needs of the critical client. Students learn to identify sophisticated equipment and machinery utilized in the management of clients suffering from these deviations.

NURSING DEPARTMENT

Post-Baccalaureate Professional Certificate in Gastroenterology Nursing Care

The Certificate is designed for nursing professionals who hold a bachelor's degree in Nursing Sciences, a permanent general nursing license and a minimum of one (1) year of nursing experience. It promotes the development of properly trained and specialized practitioners in gastroenterology nursing. It also promotes the development of specialized knowledge and skills in comprehensive gastroenterology nursing care and in supporting patient family members during invasive procedures performed in medical offices, outpatient clinics, or hospitals. In addition, students will develop skills with regards to office management, patient education, and the application of research linked to this field.

The sequence is designed with 18 credits at the post-baccalaureate level. Courses will be scheduled in four (4) trimesters. It includes 180 practice hours in gastroenterology centers under the supervision of a gastroenterologist. The sequence starts in August and ends in November, the following sequence begins in November and ends in February.

FIRST YEAR

First trimesters		
CODE	DESCRIPTION	CREDITS
<u>GAST 4001</u>	Introduction to Gastroenterology Nursing	2
<u>GAST 4002</u>	Pathologies of Gastrointestinal Disorder	3
TOTAL		5

Second Trimester		
CODE	DESCRIPTION	CREDITS
<u>GAST 4003</u>	Pharmacology	2
<u>GAST 4004</u>	Gastroenterological Procedures	4
TOTAL		6

Third Trimester		
CODE	DESCRIPTION	CREDITS
<u>GAST 4005</u>	Nursing Intervention During Sedative-Analgesic Treatment	2
<u>GAST 4006</u>	Professional Standards and Responsibilities	1
TOTAL		3

SECOND YEAR

Fourth Trimester		
CODE	DESCRIPTION	CREDITS
<u>GAST 4007</u>	Fundamentals of Nursing	4
	TOTAL	<hr/> 4

Total credits: 18

LIST OF COURSES

GAST 4001: INTRODUCTION TO GASTROENTEROLOGY NURSING, two (2) credits. Study of the development and changes in gastroenterology nursing from a historic perspective that includes the roles, functions, and documentation necessary to work in a gastroenterology setting. Development of a quality assurance program in gastroenterological work areas. Study of the research process, its components and development. Basic statistics application. Discussion of ethical and legal controversies as well as the HIPPA Act. Development of counseling skills to be applied with patients of gastric diseases and their family members. Discussion and analysis of national agency standards that certify the gastroenterological practice.

GAST 4002: PATHOLOGIES OF GASTROINTESTINAL DISORDERS SEXUAL EDUCATION AND THE NURSING PROCESS, three (3) credits. Study and detection of gastrointestinal (GI) diseases, including the anatomy and normal physiology of the GI system, and the pathophysiology of diseases. Emphasis on the symptoms and signs present in patients suffering from a GI System disease.

GAST 4003: PHARMACOLOGY, two (2) credits. Discussion and analysis of the drugs most used to treat gastrointestinal diseases, the different treatment forms, and their management. Emphasis on the responsibility of the nursing professional while administering drugs.

GAST 4004: GASTROENTEROLOGIL PROCEDURES, forth (4) credits. Study of the theoretical aspects of different gastroenterological procedures. Participation in workshops related to different gastroenterological procedures in the upper and lower GI system, as well as the retrograde visualization of the GI system, performed at medical offices and hospitals. Emphasis on the responsibility of the nursing professional during sample collection, biopsies, and cytology tests. This course could be challenged according to UPRA's rules for challenging courses valid at the time.

GAST 4005. NURSING INTERVENTION DURING SEDATIVE-ANALGESIC TREATMENT, two (2) credits. Emphasis on diagnosis, intervention, and evaluation of patients who are under the effects of a sedative-analgesic treatment. Application of skills regarding sedative administration, airway management, equipment management, and an adult or pediatric patient evaluation before, during, and after undergoing the effects of a sedative-analgesic treatment.

GAST 4006: PROFESSIONAL STANDARDS AND RESPONSABILITIES: one (1) credits. Analysis of administrative and management aspects of a gastroenterology unit, its staff, type of organizational structures, leadership skills, and cost-effectiveness in managing a gastroenterology office. Discussion and analysis of infection control, cost reduction, and environmental safety standards within the work area.

GAST 4007: INTERNSHIP: Four (4) credits. Internship course that require students to comply with a fixed number of hours for each skill. During clinical practice, students will integrate skills related to administering IV sedative-analgesic drugs, offering informative talks to

the patient and his/her family members, specialized skills in managing equipment for gastroenterology diagnosis, research performed in practice centers, and assisting with administrative tasks of a gastroenterology office or department. Development of safety standards, infection control, and disaster plans. In addition, students will apply CBGNA's standards during their clinical practice.

BACHELOR'S DEGREE OF INFORMATION TECHNOLOGY MANAGEMENT AND ADMINISTRATIVE PROCESSES

(0318)

The Department of Information Technology Management and Administrative Processes offers the Bachelor's degree in Information Technology Management and Administrative Processes, as approved by the Board of Governors of the UPR through Certification No. 17 (2018-2019) of August 30, 2018 and Certification No. 120 (2018-2019) of June 25, 2019, previously Department of Office Systems. It is a four year program of study that aims to provide the student the techniques and procedures for office administration. In 2007, minor changes were incorporated to temper the academic offer new employment market changes. The program is accredited since 2009 by the Accreditation Council for Business Schools and Programs (ACBSP). As of 2014 the Proposed Minor Changes to the creation of two areas of emphasis is approved: Virtual Administrative Professional (VAP) and Legal Administrative Professional (LAP). Graduates of this program can serve as administrative assistant, office manager, administrative secretary, legal assistant or virtual assistant.

The 2014 cohort applies to all freshman, and transfer students from August 2014. Areas of emphasis Legal Administrative Professional (LAP) and Virtual Administrative Professional (VAP) will be effective from August 2014 and recorded in by a Special Entry in the student's file, under the appropriate category. Students interested in any of the areas of emphasis express its intention to complete the curricular sequence through the form *Application Selection Sequence Curriculum* no later than the third semester of study.

MISSION

The Bachelor's Degree Program in Information Technology Management and Administrative Process offers an exceptional university education and promotes the integral formation of students as citizens and professionals. It contributes to the field of office administration and to social and economic progress in Puerto Rico through the preparation of administrative personnel capable of generating ideas and bringing about changes to improve the social environment. The Program promotes interaction with the community and offers opportunities for professional improvement and continuing technological education to promote social and cultural enrichment and to improve the quality of life.

The Program's mission is framed within the fundamental UPRA's principles: it aims to develop knowledge, skills and values to produce graduates that are upright, independent, creative, critical, self-learning, sensitive, and able to continue their professional development with a high degree of ethical and social responsibility, and contribute to a better quality of life.

VISION

To develop excellent administrative professionals that stand out because of their professionalism and ethical behavior and their ability to contribute to society's needs and demands.

GOALS

The Department of Information Technology Management and Administrative Process, in order to fulfill its mission, promotes:

- the integral development of its students, by enriching their intellectual, emotional, social and ethical values, so that they can attain self-fulfillment and continuing learning to actively contribute the development of our society and the international community.
- effective interaction between the Institution and the community in the search for new knowledge, solutions to problems and social and cultural enhancement.
- creative and research endeavors
- the development of knowledge about arts, sciences and technology that responds to the needs of a changing society.
- the efficient and effective use of available human, physical and financial resources for the optimal development of the academic offerings.

NOTE: Curricular sequences are continuously revised. Students are encouraged to check with their departments to be informed of the latest revisions.

AREA OF EMPHASIS: LEGAL ADMINISTRATIVE PROFESSIONAL (LAP)

The Legal Administrative Professional area of emphasis of the Information Technology Management and Administrative Process Bachelor's degree prepares the professional assistant to be able to offer administrative support services in legal environments.

This area contributes in the development of legal administrative professionals with the abilities to work in small or large legal offices, as well as in the Court System. It offers the graduates the necessary knowledge to learn how to manage a legal office in an efficient manner with a high sense of ethics and social responsibility.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
INGL 3101**	Basic English I	3
INGL 3113	Oral Practice Basic English I	0
ESPA 3101	Basic Spanish I	3
GTEC 3001	Processing and Production of Business Documents I	3
GTEC 3206	Introduction to Manual Processing of Business Correspondence in Spanish	3
GTEC 3405	Ethics and Interpersonal Relations in the Office	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
INGL 3102	Basic English II	3
INGL 3114	Oral Practice Basic English II	0
ESPA 3102	Basic Spanish	3
GTEC 3002*	Processing and Production of Business Documents II	4
GTEC 3207*	Electronic Processing of Business Documents in Spanish	4
GTEC 3406	Theoretical principles of the emerging information technologies in the office	3
TOTAL		17

*These courses must be passed with a C or better.

**_Students who score between 580 and 679 in the English language part of the College Board Examination must enroll in courses Intermediate English (ENGL 3103) and those who obtain 680 or more take Honors English (ENGL 3011).

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
INCO 3005	Business Communication I	3
ESPA XXXX	Free Selection of the General Education Program	3
CISO 3121	Introduction to Social Sciences I	3
GTEC 3003	Processing and Production of Business Documents III	3
GTEC 3307	Procedures for Handling Personal Information and Electronic Presentations	2
GTEC 3308	Procedures for Handling Financial Reports and Control of Documents in the Office	2
MATE 3001	Introductory Mathematics I	3
TOTAL		19

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3015***	Elementary Statistics	3
PSIC 3005	General Psychology	3
GTEC 3216	Procedures for the Administration of the Legal Office	3
GTEC 3226	Processing and Production of Legal Documents	3
GTEC	Guided Professional Elective	3/4
TOTAL		15/16

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
	General Education Course in Humanities	3
	General Education Course in Sciences	3
INCO 3025	Conversational English I	1
GTEC 4401	Office Procedures and Administration I	4
GTEC 4115	Note-taking techniques in Spanish and its Application in Legal Documents and Emerging Technologies	3
GTEC 4428	Principles and Procedures of Basic Accounting for Administrative Professionals	3
TOTAL		17

***Freshman students (2016 cohort) must take Fundamentals of Statistical Reasoning (CISO 3155) instead of Elementary Statistics (MATE 3015). Active students who have not taken MATE 3015 can take CISO 3155. Students who took MATE 3015 and failed, they need to repeat the same course.

Second Semester

CODE	DESCRIPTION	CREDITS
	General Education Course in Humanities	3
	General Education Course in Sciences	3
GTEC 4402	Office Procedures and Administration II	3
GTEC 4417	Methods of classifications and coding documents in manual and electronic systems	3
GTEC 4117	Introduction to Manual Processing of Legal Documents in English	4
GTEC 4429	Electronic Processing and Management Accounting for Administrative Professionals	1
TOTAL		17

FOURTH YEAR

First Semester

CODE	DESCRIPTION	CREDITS
ELECTIVE	Elective	3
ELECTIVE	Elective	3
GTEC	Guided Professional Elective	3/4
GTEC 4437	Integration Seminar for Administrative Professionals	4
TOTAL		13/14

Second Semester

CODE	DESCRIPTION	CREDITS
MERC 3115	Principles of Marketing	3
ELECTIVE	Elective	3
ELECTIVE	Elective	3
GTEC 4985	Work Internship and Seminar	5
TOTAL		14

Total Credits: 127-129

Guided Professional Electives:

CODE	DESCRIPTION	CREDIT S
GTEC 3127	Procedures for Handling Technological Tools for Virtual Office	3
GTEC 3236	Foundations of the art of public speaking	3
GTEC 3407	Advanced Procedures in Creative Business Documents with Integrated Programs	4
GTEC 3425	Creating Publications for Virtual Office	3
GTEC 3426	Web Pages Design for Virtual Offices	1
GTEC 4015	Basic Procedures of the Medical Office Billing	3
GTEC 4016	Procedures Manual and Electronic Medical Billing Plans	3
GTEC 4215	Processing and Advanced Production of Business Documents	3
GTEC 4217	Simulation of Specialized Roles in the Professional Office	3
GTEC 4218	Study and Analysis of Emerging Information Technologies and Ergonomics in the Office	3
GTEC 4506	Strategies for Planning and Implementation of Virtual Trainings	3

Free Electives for other academic departments:

CODE	DESCRIPTION	CREDIT S
GTEC 3027	Innovation and Foresight for Professional Success	3
GTEC 4030	Desktop Publishing	3
GTEC 4017	Design and Documents Management for Professionals	3
GTEC 4505	In-service Training Techniques	3

AREA OF EMPHASIS: VIRTUAL ADMINISTRATIVE PROFESSIONAL (VAP)

The Virtual Administrative Professional area of emphasis of the Information Technology Management and Administrative Process Bachelor's degree prepares the professional assistant to offer administrative support services in virtual environments.

The graduates develop the skill to offer technical and creative services in an independent manner to small or large companies in diverse scenarios. This area provides the opportunity of incorporating technological tools which will help the administrative professional to work from distant places.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
INGL 3101**	Basic English I	3
INGL 3113	Oral Practice Basic English I	0
ESPA 3101	Basic Spanish I	3
GTEC 3001	Processing and Production of Business Documents I	3
GTEC 3206	Introduction to Manual Processing of Business Correspondence in Spanish	3
GTEC 3405	Ethics and Interpersonal Relations in the Office	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
INGL 3102	Basic English II	3
INGL 3114	Oral Practice Basic English II	0
ESPA 3102	Basic Spanish	3
GTEC 3002*	Processing and Production of Business Documents II	4
GTEC 3207*	Electronic Processing of Business Documents in Spanish	4
GTEC 3406	Theoretical principles of the emerging information technologies in the office	3
TOTAL		17

*These courses must be passed with a C or better.

**_Students who score between 580 and 679 in the English language part of the College Board Examination must enroll in courses Intermediate English (ENGL 3103) and those who obtain 680 or more take Honors English (ENGL 3011).

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
INCO 3005	Business Communication I	3
ESPA XXXX	Free Selection of the General Education Program	3
CISO 3121	Introduction to Social Sciences I	3
MATE 3001	Introductory Mathematics I	3
GTEC 3003	Processing and Production of Business Documents III	3
GTEC 3307	Procedures for Handling Personal Information and Electronic Presentations	2
GTEC 3308	Procedures for Handling Financial Reports and Control of Documents in the Office	2
TOTAL		19

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3015***	Elementary Statistics	3
PSIC 3005	General Psychology	3
GTEC 3407	Advanced Procedures in Creative Business Documents with Integrated Programs	4
GTEC 3425	Creating Publications for Virtual Office	3
GTEC 3426	Web Pages Design for Virtual Offices	1
GTEC	Guided Professional Elective	3/4
Total		17/18

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
	General Education Course in Humanities	3
	General Education Course in Sciences	3
INCO 3025	Conversational English I	1
GTEC 4401	Office Procedures and Administration I	4
GTEC 4218	Study and Analysis of Emerging Information Technologies and Ergonomics in the Office	3
GTEC 4428	Principles and Procedures of Basic Accounting for Administrative Professionals	3
TOTAL		17

***Freshman students (2016 cohort) must take Fundamentals of Statistical Reasoning (CISO 3155) instead of Elementary Statistics (MATE 3015). Active students who have not taken MATE 3015 can take CISO 3155. Students who took MATE 3015 and failed, they need to repeat the same course.

Second Semester

CODE	DESCRIPTION	CREDITS
	General Education Course in Humanities	3
	General Education Course in Sciences	3
GTEC 4402	Office Procedures and Administration II	3
GTEC 4417	Methods of classifications and coding documents in manual and electronic systems	3
GTEC 4506	Strategies for Planning and Implementation of Virtual Trainings	3
GTEC 4429	Electronic Processing and Management Accounting for Administrative Professionals	1
TOTAL		16

FOURTH YEAR

First Semester

CODE	DESCRIPTION	CREDITS
ELECTIVE	Elective	3
ELECTIVE	Elective	3
GTEC	Guided Professional Elective	3/4
GTEC 4437	Integration Seminar for Administrative Professionals	4
TOTAL		13/14

Second Semester

CODE	DESCRIPTION	CREDITS
MERC 3115	Principles of Marketing	3
ELECTIVE	Elective	3
ELECTIVE	Elective	3
GTEC 4985	Work Internship and Seminar	5
TOTAL		14

Total credits: 128/130

Guided Professional Electives (6-8 crs.):

CODE	DESCRIPTION	CREDIT S
GTEC 3127	Procedures for Handling Technological Tools for Virtual Office	3
GTEC 3216	Procedures for the Administration of the Legal Office	3
GTEC 3226	Processing and Production of Legal Documents	3
GTEC 3236	Foundation of the art of public speaking	3
GTEC 4015	Basic Procedures of the Medical Office Billing	3
GTEC 4016	Procedures Manual and Electronic Medical Billing Plans	3
GTEC 4115	Note-taking techniques in Spanish and its Application in Legal Documents and Emerging Technologies	3
GTEC 4117	Introduction to Manual Processing of Legal Documents in English	4
GTEC 4215	Processing and Advanced Production of Business Documents	3
GTEC 4217	Simulation of Specialized Roles in the Professional Office	3

Free Electives for other academic departments:

CODE	DESCRIPTION	CREDIT S
GTEC 3027	Innovation and Foresight for Professional Success	3
GTEC 4030	Desktop Publishing	3
GTEC 4017	Design and Documents Management for Professionals	3
GTEC 4505	In-service Training Techniques	3

MINOR IN PROFESSIONAL DIVERSIFICATION

The minor concentration in Professional Diversification will train students from other academic disciplines with personal and professional skills that will expand their entry and success opportunities in the job market, regardless of the academic program to which they belong. The student will demonstrate security and be competitive in the areas of career planning, personal marketing, and professional diversification. It will enable students to study the labor market, as well as its competitiveness, so that they can carry out a thorough inventory of their skills so that in this way they can analyze the strengths, weaknesses, opportunities and challenges they may face.

Once the student conducts the analysis, he/she can prepare an assertive professional action plan. In addition, the minor concentration will enable the student with the skills required to plan, coordinate and conduct all types of professional improvement activities effectively.

REQUIREMENTS TO QUALIFY

1. Be a student admitted and regular in UPRA.
2. Meet the admission requirements of the program in which the student is officially enrolled.
3. Have a general minimum academic average of 2.5.
4. Declare the minor concentration no later than two years before the expected graduation date of the program in which it is officially classified and before having passed the required 50% of the credits required in its main curriculum through the form provided for it.
5. Complete the application form **Request for Admission to Second Baccalaureates, Second Concentrations, Minor Concentrations and Professional Certifications** in the Registrar's Office, as well as the declaration of intent.

REQUIRED COURSES

CODE	DESCRIPTION	CREDITS
GTEC 3027	Innovation and Foresight for Professional Success	3
GTEC 3236	Foundations of the Art of Public Speaking	3
GTEC 4017	Design and Document Management for Professionals	3
GTEC 4030	Desktop Publishing	3
TOTAL		12

FACULTY

Cordero Zeno, Gisela, Ed.D., *Professor*, Doctor in Education, Concentration in Curriculum and Instruction, Inter American University of Puerto Rico. Master in Arts, Higher Education in Business Education, New York University.

Cruz Román, Miriam Z., Ed.D., *Associate Professor*, Doctor in Education, Concentration in Curriculum and Teaching, Pontificia Universidad Católica de Puerto Rico. Master in Arts, Business Education, Inter American University of Puerto Rico.

Durán Nieves, Ingrid M., Ed.D., *Associate Professor*, Doctor in Education, Concentration in Business Education, Inter American University of Puerto Rico. Master in Arts, Business Education, Inter American University of Puerto Rico.

Harrison Morales, Diana M., Ed.D., *Professor*, Doctor in Education, Concentration in Curriculum and Teaching, Pontificia Universidad Católica de Puerto Rico. Master in Arts, Business Education, Inter American University of Puerto Rico.

Quiñones Castillo, Weyna Ed.D., *Professor*, Doctor in Education, Concentration in Curriculum and Instruction, Inter American University of Puerto Rico. Master in Arts, Higher Education in Business Education, New York University.

Saavedra Serrano, Gloria E., M.A., *Professor*, Master in Arts, Higher Education in Business Education, New York University.

Vélez Román, Vanessa Y., M.A., *Professor*, Master in Arts, Business Education, Inter American University of Puerto Rico.

LIST OF COURSES

GTEC 3001: PROCESSING AND PRODUCTION OF BUSINESS DOCUMENTS I, three (3) credits, three (3) contact hours per week. Teaching the techniques and development of basic skills necessary for managing the touch-typing technique in a keyboard. Production of business documents, such as: personal-business letters, business letters, traditional memoranda and tabulation. Introduction to teaching typewriting rules, proofreading techniques, error correction and electronic dictionaries. Introduction to the use of basic functions of a word processing program and other information technologies. Emphasis on the development of ethics in the use of information technologies, desirable qualities and good habits for the work environment. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3002: PROCESSING AND PRODUCTION OF BUSINESS DOCUMENTS II, four (4) credits, four (4) contact hours per week. Pre-requisite: GTEC 3001. Teaching of the formats and production of business letters and memoranda in all styles with special notations and second pages, envelopes and tables. Emphasis in the development of basic skills and the teaching of the typewriting theory. Discussion of the typewriting rules for document production and implementation of proofreading techniques through electronic tools. Handling of internal and external business correspondence in all the aspects of the typewriting production. Use of the Internet for updating the addresses and the management of postal services. Presentation of intermediate functions of a word processing program, operating systems and other information technologies. Emphasis on the development of ethics in the use of information technologies, desirable qualities and good habits for the work environment. This course must be passed with a minimum grade of C. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3003: PROCESSING AND PRODUCTION OF BUSINESS DOCUMENTS III, three (3) credits, three (3) contact hours per week. Pre-requisite: GTEC 3002. Teaching of the typewriting theory for the processing and production of business forms and documents of frequent use in the contemporary office. Emphasis in the development of optimum basic skills. Application of the parliamentary procedures for the effective coordination of meetings. Teaching of the templates for the production of: transmittal sheets, facsimiles, among others. Production of travel itineraries, press releases, outlines, agendas, call for meetings, minutes, and reports. Review of the typewriting rules for the production of documents, proofreading techniques, and the use of technological tools for proofreading. Presentation of advanced functions of a word processing program and electronic correspondence. Emphasis on the development of ethics in the use of information technologies, desirable qualities and good habits for the work environment. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3027: INNOVATION AND FORESIGHT FOR PROFESSIONAL SUCCESS, three (3) credits, three (3) contact hours per week. Development of skills for career success. Emphasis on career planning and personal marketing. Teaching professional etiquette, planning and coordination of events. It includes strategies for effective professional leadership. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3127: PROCEDURES FOR HANDLING TECHNOLOGICAL TOOLS FOR VIRTUAL OFFICE, three (3) credits, three (3) contact hours per week. Teaching various useful technological tools for the office. Functions to design digital content with audio, video and images. Development and creation of blogs, online surveys, concept maps, interactive presentations, as well as recording and playback of sounds. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3206: INTRODUCTION TO MANUAL PROCESSING OF BUSINESS CORRESPONDENCE IN SPANISH, three (3) credits, three (3) contact hours per week. **Co-requisite: ESPA 3101 or ESPA 0060.** Teaching and application of the rules for the effective development of language skills in longhand transcription of business documents. Application of proofreading techniques for the effective edition for the production of business correspondence in the office. Emphasis on the development of ethics and good work habits. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3207: ELECTRONIC PROCESSING OF BUSINESS DOCUMENTS IN SPANISH, four (4) credits, four (4) contact hours per week. Pre-requisite: GTEC 3206. Co-requisite: GTEC 3002. Teaching and application of the rules for the effective development of language skills in computerized transcription of business documents. Integration of electronic resources for the effective edition of the production of business correspondence in the office. Emphasis on the development of ethics and good work habits. This course must be passed with a minimum grade of C. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3216: PROCEDURES FOR THE ADMINISTRATION OF THE LEGAL OFFICE, three (3) credits, three (3) contact hours per week. Co-requisite: GTEC 3226. Education, discussion and application of the terminology of legal nature and ethical aspects of information processing in offices of legal matters. Analysis of procedures for preparing and processing documents are filed in courts, administrative agencies, Land Registry, among others. Emphasis on the responsibilities and duties of the administrative staff at the law office, and the processing of the various reports submitted in fulfillment of the duties of the notary. Knowledge of the regulations governing the preparation of legal documents. Knowledge of the different offices that regulate the legal practice and its impact on the office. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3226: PROCEDURES AND PRODUCTION OF LEGAL DOCUMENTS, three (3) credits, three (3) contact hours per week. Pre-requisite: GTEC 3003. Co-requisite: GTEC 3216. Emphasis on the development of basic skills and teaching the typing theory for processing and production of specialized documents often used in legal offices. Teaching vocabulary legal letters, testimonials, contracts, deeds, affidavits and court documents. Discussion of the typing rules for hyphenation in the document creation and implementation of proofreading techniques and electronic dictionaries. Emphasis on the development of ethics in the use of information technology, desirable and good habits for the work environment qualities. Includes form creation and reporting of legal nature that are submitted to the various offices established by regulations pertaining to the practice of the notary. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3236: FOUNDATIONS OF THE ART OF PUBLIC SPEAKING, three (3) credits, three (3) contact hours per week. Teaching strategies and projection methods to effectively communicate with customers and provide better customer service. Includes the study of the planning and organization of the message, the importance of proper oral and body language as well as techniques to control nervousness. Discussion and application of the rules on the selection and preparation of various visual media as a tool to guide public speaking. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3307: PROCEDURES FOR HANDLING PERSONAL INFORMATION AND ELECTRONIC PRESENTATIONS, two (2) credits, two (2) contact hours per week. Pre-requisite: GTEC 3001. Co-requisite: GTEC 3308. Teaching and application of functions in the programs of management of personal information and electronic presentations. The student will perform tasks of handling personal information and electronic presentations. The student will perform tasks of managing the electronic calendar and is trained to create visual material for electronic exhibitions. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3308: PROCEDURES FOR HANDLING ELECTRONIC SPREADSHEET AND DATA BASE IN THE MODERN OFFICE, two (2) credits, four (4) contact hours per week. Pre-requisite: GTEC 3001. Co-requisite: GTEC 3307. Learning in the functions of electronic spreadsheets and data bases most used in the market by administrative professional. The student will prepare simple financial reports and be trained in designing and managing databases. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3405: ETHICS AND INTERPERSONAL RELATIONS IN THE OFFICE, three (3) credits, three (3) contact hours per week. This is an introductory-level course which promotes self-esteem, emotional control, and effective communications. It includes a discussion of essential competences for success in the workplace; such as problem solving, the decision process, conflict management skills, cultural diversity considerations, ethical conduct, stress management, and productivity. Community service is part of this course. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3406: THEORETICAL PRINCIPLES AND THE EMERGING INFORMATION TECHNOLOGIES IN THE OFFICE, three (3) credits, three (3) contact hours per week. Teaching of theoretical concepts of the emerging information technologies. Furthermore, it has its impact on society and the human aspect in the use of different technologies. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3407: ADVANCED PROCEDURES IN CREATIVE BUSINESS DOCUMENTS WITH INTEGRATED PROGRAMS, four (4) credits, four (4) contact hours per week. Pre-requisite: GTEC 3003, GTEC 3307, GTEC 3308. Elaboration of business documents with integrated programs. Application of advanced features of programs in creative work. Developing the skills of information search and management for the development of research. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3425: CREATING PUBLICATIONS FOR VIRTUAL OFFICE, three (3) credits, three (3) contact hours per week. Pre-requisite: GTEC 3003. Co-requisite: GTEC 3426. Teaching procedures for handling electronic publications in the office. Design and creation of electronic publications, such as newsletters, flyers, brochures, among others. This course can be taught in both traditional and distance learning educational modalities.

GTEC 3426: WEB PAGES DESIGN FOR VIRTUAL OFFICES, one (1) credit, one (1) contact hour per week. Pre-requisite: GTEC 3003. Co-requisite: GTEC 3425. Teaching procedures for the creation of the web page in the office. Basic to design, implement and publish pages on Internet principles. Includes the study of the basic aspects of a program dedicated to the design of Web pages and HTML. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4015: BASIC PROCEDURES OF THE MEDICAL OFFICE BILLING, three (3) credits, three (3) contact hours per week. Study of the concepts, terminology, documents, forms, legal and ethical issues related to the handling of information used by the Administrative Professional in the medical office. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4016: PROCEDURES MANUAL AND ELECTRONIC MEDICAL BILLING PLANS, three (3) credits, three (3) contact hours per week. Pre-requisite: GTEC 4015. Learning the basics of billing health plans through a program for medical billing. Provides integrated application of skills and knowledge: codification of procedures and medical diagnoses, medical billing plans manually and electronically, general audit procedures and grievance procedures to medical plans bill unpaid, through practice classroom. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4017: DESIGN AND DOCUMENT MANAGEMENT FOR PROFESSIONALS, three (3) credits, three (3) contact hours per week. Teaching of the techniques and development of basic skills needed to use the computer keyboard for personal use. Production and editing documents using a word processing program. Emphasis on the production of documents for the job search, such as: cover letter and resume. Processing of business correspondence, such as: letters, memos, and electronic correspondence. Emphasis on the development of ethics in the use of information technologies, desirable qualities and good habits for the work environment. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4030: DESKTOP PUBLISHING, three (3) credits, three (3) contact hours per week. Teaching design principles of computerized publications. Design, creation and production of publications for personal and professional use, such as: flyers, newsletters, newspapers and personal documents. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4115: NOTE-TAKING TECHNIQUES IN SPANISH AND ITS APPLICATION IN LEGAL DOCUMENTS AND EMERGING TECHNOLOGIES, three (3) credits, three (3) contact hours per week. Pre-requisite: ESPA 3101 or ESPA 0060. Introduction to the teaching of basic principles to take notes quickly in a short Spanish. Developing the skill of speed, retention of words and the skill of taking dictation with emphasis on its application to diverse information technologies. It includes strengthening the skills of grammar and spelling in Spanish for a better transcript. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4117: INTRODUCTION TO MANUAL PROCESSING OF LEGAL DOCUMENTS IN ENGLISH, four (4) credits, four (4) contact hours per week. Pre-requisite: INGL 3101, GTEC 4115. Teaching basic techniques for taking dictation and application of standards for the effective development of language skills in the transcription of business documents. Emphasis on the development of attitudes and good work habits. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4215: PROCESSING AND ADVANCED PRODUCTION OF BUSINESS DOCUMENTS, three (3) credits, three (3) contact hours per week. Pre-requisite: GTEC 3003. Emphasis on teaching the typewriting theory for processing and production of specialized documents used in modern offices. Teaching of circular letters, certifications, resolutions, business reports, academic papers, among others. Presentation of style manuals with emphasis in APA. Implementation of the typewriting rules for hyphenation, for creating documents and the techniques and electronic tools for proofreading. Emphasis on the development of ethics in the use of information technology, desirable and good habits for the workplace. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4217: SIMULATION OF SPECIALIZED ROLES IN THE PROFESSIONAL OFFICE, three (3) credits, three (3) contact hours. Pre-requisite: GTEC 3003, GTEC 3307, GTEC 3308. Course that integrates the skills, knowledge and attitudes of administrative professional. Includes processing of documents in which students stimulate the work of administrative professional. Have the opportunity to make decisions, prioritize, edit, transcribe, edit documents and apply proofreading techniques. Tasks will be provided for the student work documenting human resources offices, finance, accounting, public relations, among others. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4218: STUDY AND ANALYSIS OF EMERGING INFORMATION TECHNOLOGIES AND ERGONOMICS IN THE OFFICE, three (3) credits, three (3) contact hours per week. Pre-requisite: GTEC 3406. Study and analysis of emerging information technologies. Emphasis on comparison and evaluation techniques for the proper selection of office equipment, software, and furnishings. Discussion of the basic components in the preparation of a proposal for the purchase and evaluation of office equipment, programs and furniture based on human and ergonomic factors. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4401: OFFICE PROCEDURES AND ADMINISTRATION I, four (4) credits, four (4) contact hours per week. Pre-requisite: GTEC 3003. Emphasis on the duties, responsibilities, and the development of personal and professional characteristics of administrative professionals. Discussion and implementation of procedures for the administration in the modern office, business etiquette and protocol. Teaching the principles in decision-making for planning events and travel. It includes the study of techniques for the effective administration of the time for the best functioning of the office, and exploring the job market for the preparation of documents for the effective job search. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4402: OFFICE PROCEDURES AND ADMINISTRATION II, three (3) credits, three (3) contact hours per week. Pre-requisite: GTEC 4401. Teaching the principles that apply in the planning, organization, direction and control of activities typical of the different offices and in solving the problems that arise in them. Emphasis will be given to aspects related to human resources, ergonomic factors, ethical conduct, customer service, and entrepreneurship. Discussion of issues relating to global markets. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4417: CLASSIFICATION AND CODING METHODS IN THE MANUAL AND ELECTRONIC DOCUMENTS, three (3) credits, three (3) contact hours per week. Pre-requisite: GTEC 3308. Teaching the rules for classifying and encoding systems and electronic manuals. Study the organization and procedures to file depending on the systems: alphabetic, numeric, geographical and by subject. Training methods and techniques for handling and document control, charge system, transfer, disposal of documents and data processing. Introduction to the different laws governing the control and disposal of documents. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4428: PRINCIPLES AND PROCEDURES OF BASIC ACCOUNTING FOR ADMINISTRATIVE PROFESSIONALS, three (3) credits, three (3) contact hours per week. Accounting designed for administrative professionals. Includes the study of the basic elements and procedures of double-entry bookkeeping, with proper application in wages, greater and trial balance. Bank Reconciliation and control of petty cash system. Preparation and analysis of financial statements. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4429: ELECTRONIC PROCESSING AND MANAGEMENT ACCOUNTING FOR ADMINISTRATIVE PROFESSIONALS, one (1) credit, one (1) contact hour per week. Pre-requisite: GTEC 3308, GTEC 4428. General Survey of the basics of accounting and transaction analysis, record adjusting entries and closing and preparation of financial statements using a computerized accounting system. Control of cash and electronic preparation of bank reconciliations. Creating graphs of accounts, recording of entries in the general wage, among others, then graphically present the results of financial operations of enterprises. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4437: INTEGRATION SEMINAR FOR ADMINISTRATIVE PROFESSIONALS, four (4) credits, four (4) contact hours per week. Pre-requisite: GTEC 4402. Emphasis on the use and application of various electronic resources for interdisciplinary research on topics of business through the effective use of the Internet and its various resources for finding, obtaining and transmitting information in enterprises. Requires a formal oral and written presentation of research to the community. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4505: IN-SERVICE TRAINING TECHNIQUES, three (3) credits, three (3) contact hours per week. Teaching methodologies, strategies and techniques for planning, design and development of training in various work environments. Discussion of the basic components in the preparation of a proposal for training and the elements for its written presentation. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4506: STRATEGIES FOR PLANNING AND IMPLEMENTATION OF VIRTUAL TRAININGS, three (3) credits, three (3) contact hours per week. Pre-requisite: GTEC 3407, GTEC 4401. Evaluation of emerging technologies and study of the basic strategies for planning and implementation of virtual trainings. Design, development, coordination and implementation of virtual trainings. This course can be taught in both traditional and distance learning educational modalities.

GTEC 4985: WORK INTERNSHIP AND SEMINAR, five (5) credits, fifteen (15) contact hours per week and one (1) hour of seminar. Pre-requisite: GTEC all courses. Practice internship in community offices selected as a practice center. The practice period amounts to 200 hours per semester and 15 hours of seminar, in which students make the transition from college to the office. This course can be taught in both traditional and distance learning educational modalities.

PHYSICS-CHEMISTRY DEPARTMENT

BACHELOR OF TECHNOLOGY IN INDUSTRIAL CHEMICAL PROCESSES (4501)

The Bachelor of Technology in Industrial Chemical Processes Technology has a curriculum which integrates knowledge in chemical engineering, chemistry and science for the support of engineering activities in an industrial scenario. Graduates of the program are prepared to enter careers in design, manufacturing, marketing, operation and maintenance in the field of chemical engineering technology. Graduates of this program can also work in areas such as: laboratory, quality control, industrial safety, water treatment, environmental control and other jobs related to chemical processes.

The program is accredited by by ABET-ETAC (Engineering Technology Accreditation Commission). ABET is an international recognized accrediting agency for university programs in engineering and technology (www.abet.org).

MISSION

Provide a continuously improved academic experience in chemical engineering technology with industrial chemical processes emphasis, educating students to become responsible and competitive professionals who will serve the industry and the society.

PROGRAM EDUCATIONAL OBJECTIVES

Graduates of the program are expected to:

1. Meet the profile required by the industry for chemical engineering technicians in the areas of process and laboratory technology.
2. Occupy technical support and managerial positions in the chemical processes industry and related fields.
3. Address the ethical and social implications of their profession and the commitment to continuous professional development.

STUDENT OUTCOMES

Graduates of the program will be able to:

1. Select and apply concepts, techniques, skills and updated resources in the area of chemical engineering technology.
2. Select and apply concepts of mathematics, science, engineering and technology in the assessment and solution of technological problems related to the chemical processes.
3. Conduct, analyze and interpret experiments and apply the results in the evaluation of a chemical process.
4. Design systems, components or processes for technological problems related to chemical processes.
5. Work efficiently as a member or leader of a technical team.
6. Identify, analyze and solve technological problems related to the chemical processes.
7. Apply written, oral, and graphical communication using adequate information resources.
8. Recognize the importance of self-directed continuing professional development.
9. Understand the social, ethical and professional responsibilities related to their academic preparation including respect for diversity.
10. Demonstrate knowledge about the contributions that chemical engineering technologists make to the local and international community.
11. Demonstrate commitment to quality and continuous improvement.
12. Apply knowledge and practical expertise in solving technological problems by the industrial application of inorganic chemistry, organic chemistry, analytical chemistry; physics and process stoichiometry.
13. Apply the concepts of chemical engineering unit operations such as mass transfer, heat transfer and fluid mechanics to the design, operation and maintenance of chemical processes.
14. Apply the principles of thermodynamics, process control and instrumentation, computer applications and materials science to the design, operation and maintenance of chemical processes.
15. Operate, test and monitor chemical process equipment in compliance with applicable regulations.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
TEQU 3001	General Chemistry for Technology I	3
TEQU 3002	General Chemistry for Technology Lab. I	1
MATE 3004	Algebra	3
INGL 3101* ⁶⁵	Basic English I	3
INGL 3113*	Oral Practice I	0
ESPA 3101	Basic Spanish I	3
TEQU 3105	Introduction to Chemical Engineering Technology	3
TOTAL		16

Second Semester		
CODE	DESCRIPTION	CREDITS
TEQU 3003	General Chemistry for Technology II	3
TEQU 3004	General Chemistry for Technology Lab. II	1
MATE 3171	Pre-calculus I	3
ESPA 3102	Basic Spanish II	3
INGL 3102**	Basic English II	3
INGL 3114**	Oral Practice II	0
TEQU 3106	Computer Applications in Chemical Engineering Technology	3
TOTAL		16

⁶⁵ Students who score above 580 on the English language part of the College Board Examination will take INGL 3103-Intermediate English I and INGL 3104-Intermediate English II. This sequence does not require the oral practice laboratory.

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
TEQU 3107	Material and Energy Balance	3
QUIM 3025	Analytical Chemistry	4
QUIM 3026	Analytical Chemistry Lab.	0
ESPA 3208	Writing and Style	3
MATE 3172	Pre-calculus II	3
INGL 3015	English for Science and Technology	3
CISO _____	General Education in Social Sciences ²	3
TOTAL		19

Second Semester		
CODE	DESCRIPTION	CREDITS
QUIM 3450	Fundamentals of Organic Chemistry	5
QUIM 3451	Fundamentals of Organic Chemistry Lab.	0
MATE 3031	Calculus I	4
TEQU 3201	Unit Operations I: Fluid Mechanics	3
TEQU 3205	Chemical Processes Supervision and Management	3
CISO _____	General Education in Social Sciences ²	3
TOTAL		18

THIRD YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
TEQU 3203	Unit Operations II: Heat Transfer	3
TEQU 3202	Unit Operations Lab. I	1
TEQU 4006	Mathematical Topics in Chemical Engineering Technology	3
TEQU 4007	Thermodynamic Principles	3
FISI 3001	General Physics I	3
FISI 3003	General Physics Lab. I	1
HUMA_____	General Education in Humanities ²	3
TOTAL		17

Second Semester		
CODE	DESCRIPTION	CREDITS
TEQU 3204	Unit Operations Lab. II	1
TEQU 4009	Advanced Unit Operations	3
FISI 3002	General Physics II	3
FISI 3004	General Physics Lab. II	1
QUIM 4011	Instrumental Analysis	3
QUIM 4012	Instrumental Analysis Laboratory	0
HUMA_____	General Education in Humanities ²	3
_____	Elective	3
TOTAL		17

FOURTH YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
TEQU 4021	Process Control and Instrumentation	3
TEQU 4022	Process Control and Instrumentation Lab.	1
TEQU 4015	Unit Operations Techniques	3
TEQU 4020	Unit Operations Techniques Lab.	0
BIOL 4001	General Biology Fundamentals	4
BIOL 4002	General Biology Fundamentals Lab.	0
_____	Electives	6
	TOTAL	17

Second Semester		
CODE	DESCRIPTION	CREDITS
TEQU 4016	Environmental Control	3
TEQU 4105	Topics in Chemical Processes Technology	3
TEQU 4018	Techniques and Regulations of the Pharmaceutical Industry	3
BIOL 4011	Industrial Microbiology	4
BIOL 4012	Industrial Microbiology Laboratory	0
TEQU 4037	Chemical Processes Seminar	1
_____	Elective	3
	TOTAL	17
	TOTAL CREDITS: 137	

FACULTY

De Jesús Reyes, Cándida, M.S., *Associate Professor*, Master of Sciences, Organic Chemistry, University of Puerto Rico.

Fernández Martínez, Ivonne, M.S., *Associate Professor*, Master of Sciences, Chemistry, University of Puerto Rico.

García Adarme, Ana, Ph.D., *Professor*, Doctor of Philosophy, Chemical Engineering, University of Puerto Rico.

García Maldonado, Emiliano, Ph.D., *Professor*, Doctor of Philosophy, Organic Chemistry and Organometalics, University of California, Santa Barbara.

García Tauler, Rafael, M.B.A., *Instructor*, Master of Business Administration, Industrial Management, Interamerican University of Puerto Rico; Environmental Engineering Certification, University of Puerto Rico.

Herrera Martínez, Fernando, Ph.D., *Professor*, Doctor of Philosophy, Analytical Chemistry-Physics, Michigan State University.

Infante Castillo, Ricardo, Ph.D., *Professor*, Doctor of Philosophy, Chemistry, University of Puerto Rico.

Maldonado Maisonave, Carlos, Ph.D., *Assistant Professor*, Doctor of Philosophy, Chemical Engineering, University of Puerto Rico.

Méndez Torres, Abel, M.S., *Associate Professor*, Master of Science, Physics-Biophysics, University of Puerto Rico.

Montalvo Rivera, Vanessa, M.S.Ch.E., *Professor*, Master of Science, Chemical Engineering, University of Puerto Rico; Environmental Engineering Certification, University of Puerto Rico.

Nery Gómez, Guillermo, Ph.D., M.S., *Assistant Professor*, Doctor of Philosophy, Physics-Chemistry, Universidad de Puerto Rico; Master of Science, Physics, University of Puerto Rico.

Peña Hurtado, Guido, Ph.D., *Professor*, Doctor of Philosophy, Marine Biology, University of Puerto Rico.

Pérez Arenas, César, M.S., *Professor*, Master of Science, Physics, University of Puerto Rico.

Pérez Velázquez, Carlos, M.S., *Professor*, Master of Science, Physics, University of Puerto Rico

Ramos Fontán, Maiella, Ph.D., *Professor*, Doctor of Philosophy, Analytical Physics-Chemistry, Universidad de Massachusetts, Amherst.

Rivera Castillo, Neftalí, M.S., *Associate Professor*, Master of Science, Physics and Astronomy, University of Western Sydney, Australia.

Torres Díaz, Hirohito, Ph.D., *Professor*, Doctor of Philosophy, Chemical Engineering, Pennsylvania University.

Torres López, Roberto, Ph.D., *Associate Professor*, Doctor of Philosophy, Chemistry Physics, Clarkson University.

Torres Navas, Sylka, M.S., *Professor*, Master of Science, Chemistry Physics, University of Puerto Rico.

Velázquez Reynaga, Néstor, M.S.Ch.E., *Professor*, Master of Science, Chemical Engineering, University of Puerto Rico.

LIST OF COURSES

ASTR

ASTR 3008: MODERN ASTRONOMY, three (3) credits, three (3) contact hours per week. Pre-requisites: MATE 3005, MATE 3171. An introduction to modern astronomy, spherical astronomy, the solar system, the Milky Way, the structure and evolution of the stars, the interstellar medium and extra-galactic objects are discussed. Emphasis is given to modern observation methods. At the end of the semester there is a review of cosmology and the evolution of the universe.

CIFI

CIFI 3001: INTRODUCTION TO PHYSICAL SCIENCES I: three (3) credits, three (3) contact hours. The course aims to teach the structure and objectives of scientific knowledge through the discussion and analysis of original scientific papers. These include selections from most of the prominent scientists who have played a distinguished part in the development of science as a body of knowledge. Celestial and terrestrial motions and the structure of matter are the main problems studied.

CIFI 3002: INTRODUCTION TO PHYSICAL SCIENCES II: three (3) credits, three (3) contact hours. Continuation of CIFI 3001.

FISI

FISI 3001: GENERAL PHYSICS I, three (3) credits, (3) three contact hours per week. Pre-requisites: MATE 3172 or MATE 3005. Introductory course to physics as a fundamental science. It offers a unified vision of physics emphasizing the principles of conservation, the concepts of fields and waves, and the atomic point of view of matter. The first semester covers kinematics, dynamics of the particle, energy, oscillatory movement, dynamics of a system of particles and the gravitational field.

FISI 3002: INTRODUCTION TO PHYSICS II, three (3) credits, three (3) contact hours per week. Pre-requisite: PHSC 3001. This course studies electrostatics, electromagnetism, electromagnetic waves and light, and some principle of modern physics and the structure of matter.

FISI 3003: GENERAL PHYSICS LABORATORY I, one (1) credit, three (3) contact hours per week. Pre-requisite: MATE 3005, MATE 3171. This course complements the knowledge acquired by students in class. It consists of a series of experiments designed to verify the laws of mechanics and thermodynamics.

FISI 3004: GENERAL PHYSICS LABORATORY II, one (1) credit, three (3) contact hours per week. Pre-requisites: FISI 3001, FISI 3003. This course includes experiments in electromagnetism, optics and modern physics.

FISI 3009 GENERAL PRINCIPLES OF ELECTRONICS: three (3) credits, three (3) hours of contact per week. Pre-requisites: CIFI 3002, MATE 3001. General course about the principles of electricity and electronics and their application to communications media. Emphasis

is given to electric and magnetic concepts that allow for their adequate understanding with limited mathematical knowledge. A brief discussion of the development of electromagnetism will lead to a discussion of electrical conduction, both DC and AC, sources of electric energy, their interrelation and a discussion of electrical circuits. The functions of resistors, capacitors, inductors, transformers, generators, motors, diodes, transistors, oscillators and others will be studied to arrive at a basic theoretical understanding of the functioning of generally used electronic equipment. It includes relevant topics that help understand the evolution of electronics and communications towards digital systems. The social impact of these principles will be analyzed.

FISI 3011: UNIVERSITY PHYSICS I, three (3) credits, three (3) contact hours per week.

Pre-requisite: MATE 3061 or MATE 3031. Introductory physics course where some differential and integral calculus is used. The course includes: vector algebra, kinematics of particle in one and two dimensions, equilibrium, Newton's laws and law of gravitation, conservation of mechanical energy, study of the kinematics and dynamics of the rotation of a rigid body, conservation of energy and angular momentum for bodies in rotation, fluids mechanics and fundamentals of thermo-physics and thermodynamics.

FISI 3012: UNIVERSITY PHYSICS II, three (3) credits, three (3) contact hours per week.

Pre-requisite: FISI 3011. Second part of the introductory physics course where some differential and integral calculus is used. The course includes: harmonic motion, wave motion, electrostatics, electric potential, direct current, elements of electric circuits, magnetism, alternating current, Maxwell equations, and wave theory of light.

FISI 3013: UNIVERSITY PHYSICS LAB I, one (1) credits, three (3) contact hours per week.

This laboratory course is aimed at developing experimental skills in students. Experiments will be performed in the following areas: measurements, vectors, static's, linear and rotational kinematics, dynamics, conservation of momentum and energy, and thermal properties of water.

FISI 3014: UNIVERSITY PHYSICS LAB II, one (1) credit, three (3) contact hours per week.

Pre-requisites: FISI 3011, FISI 3013. This is a laboratory course aimed at developing experimental skill in students. Experiments will be performed in the following areas: oscillatory motion, waves, electrostatics, direct current, alternating current, Kirchhoff laws, geometrical and physical optics.

FISI 3171: PHYSICS I, four (4) credits, four (4) contact hours per week. Pre-requisites:

MATE 3031 or MATE 3183 or MATE 3144. Principles of mechanics, waves and thermodynamics for engineering and the physical sciences.

FISI 3172: PHYSICS II, four (4) credits, four (4) contact hours per week. Pre-requisites:

FISI 3171, MATE 3031 or MATE 3183 or MATE 3144. Principles of electricity, magnetism optics and modern physics for engineering and the physical sciences.

FISI 3173: PHYSICS I LABORATORY: one (1) credit, two (2) hours per week of laboratory. Co-requisite: FISI 3171 or FISI 3162. Experiments in mechanics, waves and thermodynamics to complement **PHYSICS I**.

FISI 3174: PHYSICS II LABORATORY: one (1) credit, two (2) contact hours per week of laboratory. Co-requisite: FISI 3172 or FISI 3162. Experiments in electricity, magnetism, optics and modern physics to complement **PHYSICS II**.

FISI 4985: UNDERGRADUATE RESEARCH, two (2) credits, six (6) contact hours per week. Pre-requisite: FISI 3011. Supervised research in the area of physics that aims to interest, stimulate and offer the student experiences and training in scientific research.

QUIM

QUIM 3001: GENERAL CHEMISTRY I, four (4) credits, three contact hours per week. Co-requisite: QUIM 3003. Study of the fundamentals of Chemistry with emphasis on the following topics: matter and its physical and chemical properties, measures, atoms, molecules and ions, stoichiometry, types of reaction, gases, thermochemistry, periodic table, quantum theory and atomic structure, chemical bonds and molecular geometry.

QUIM 3002: GENERAL CHEMISTRY II, four (4) credits, three (3) contact hours per week. Co-requisite: QUIM 3004. Pre-requisites: QUIM 3001, QUIM 3003. Study of the fundamentals of Chemistry with emphasis on the following topics: molecule polarity, intermolecular forces and changes in state of matter, solutions, colligative properties, kinetics and reaction mechanism, chemical equilibrium, acids, bases and salts, buffer systems, titration curves, thermodynamics and electrochemistry.

QUIM 3003: GENERAL CHEMISTRY LAB I, zero (0) credits, three (3) contact hours per week. Co-requisite: QUIM 3001. This laboratory complements the General Chemistry I lecture. It includes laboratory experiences where the following subjects are emphasized: safety techniques, chemical techniques and statistical are emphasized, chemical and physical properties, stoichiometry, types of reactions preparation of solutions, gases, thermochemistry, periodic table, chemical bonds and molecular geometry.

QUIM 3004: GENERAL CHEMISTRY LAB II, zero (0) credits, three (3) contact hours per week. Co-requisite: QUIM 3002. This laboratory complements the General Chemistry II lecture. It includes laboratory experiences that emphasize the following topics: safety techniques, chemical techniques, statistical analysis intermolecular forces and states of matter, solutions, colligative properties, kinetics and reaction mechanism, chemical equilibrium and Le Chatelier's principle, acids, bases, buffer systems, titration curves, thermodynamics and electrochemistry.

QUIM 3131: GENERAL CHEMISTRY I, three (3) credits, three contact hours per week. Co-requisite: QUIM 3133. Basic principles of chemistry: composition, properties, and change of matter. Topics include: atomic structure, chemical reactions, periodic properties of the elements, stoichiometry, chemical bonds, and thermochemistry.

QUIM 3132: GENERAL CHEMISTRY II, three (3) credits, three (3) contact hours per week. Co-requisites: QUIM 3134, MATE 3171. Pre-requisite: QUIM 3131. Basic principles of chemistry: composition, properties, and change of matter. Topics include: the states of matter, solutions, acids and bases, kinetics, chemical equilibrium, and electrochemistry.

QUIM 3133: GENERAL CHEMISTRY LAB I, one (1) credit, three (3) contact hours per week. Co-requisite: QUIM 3131. This laboratory corresponds to the course of GENERAL CHEMISTRY I (QUIM 3131). It includes laboratory safety techniques and experiments in liquids, solids, properties of gases, changes of matter states, stoichiometry, atomic theory, molecular structure, chemical properties, periodic classification, electronic theory and ionic and covalent bonds.

QUIM 3134: GENERAL CHEMISTRY LAB II, one (1) credit, three (3) contact hours per week. Co-requisite: QUIM 3132. Pre-requisites: QUIM 3131, QUIM 3133. This laboratory corresponds to the course of GENERAL CHEMISTRY II (QUIM 3132). It includes laboratory experiments in liquids and solids intermolecular forces, change of matter states, physical properties of solutions, kinetics, chemical equilibrium, acids and base equilibrium, solubility, oxidation-reduction reactions, electrochemistry and thermodynamics.

QUIM 3011: GENERAL, ORGANIC BIOCHEMISTRY I, five (5) credits, four (4) contact hours per week. This course includes the fundamental principles of general and organic chemistry for non-majors. It focuses on health, science and nutrition.

QUIM 3012: GENERAL, ORGANIC BIOCHEMISTRY II, five (5) credits, four (4) contact hours per week. Pre-requisites: QUIM 3011, QUIM 3013. This course includes the fundamental principles of general, organic and biochemistry for non-majors.

QUIM 3013: GENERAL, ORGANIC BIOCHEMISTRY LAB I, zero (0) credits, three (3) contact hours per week. This laboratory complements the theory discussed in **QUIM 3011**. It includes basic experiments in general, organic and biochemistry.

QUIM 3014: GENERAL ORGANIC BIOCHEMISTRY LAB II, zero (0) credits, three (3) contact hours per week. Pre-requisites: QUIM 3011, QUIM 3013. This course helps to develop skills in organic and biochemistry as applied to health and nutrition.

QUIM 3025: ANALYTICAL CHEMISTRY, four (4) credits, three (3) contact hours per week. Pre-requisites: QUIM 3002 or TEQU 3003. Co-requisites: QUIM 3026. Study of theory and methods for qualitative and quantitative analysis using gravimetric and volumetric methods, including potentiometric titration. Introduction to the spectrophotometric methods of analysis with emphasis on the ultraviolet-visible.

QUIM 3026: ANALYTICAL CHEMISTRY LAB, zero (0), six (6) contact hours per week. Co-requisites: QUIM 3025. Laboratory experiences in quantitative analysis emphasizing the determination of analytes in unknown samples by: gravimetric, volumetric, potentiometric and spectrophotometric techniques. Includes topics in statistical treatment of data.

QUIM 3051: PRINCIPLES OF GENERAL ORGANIC CHEMISTRY, five (5) credits, four (4) contact hours per week. A compendium of the principles of general chemistry and an introduction to organic chemistry. For students majoring in Nursing.

QUIM 3052: PRINCIPLES OF GENERAL ORGANIC CHEMISTRY LAB, zero (0) credits, three (3) contact hours per week. This course complements the theoretical course. It includes experiments in general and organic chemistry.

QUIM 3055: ANALYTICAL CHEMISTRY, four (4) credits, three (3) lecture and one (1) hour of laboratory per week. Pre-requisite: QUIM 3042 or QUIM 3002. Study of the basic topics of analytical chemistry. Emphasis is given to the theory and practice of current instrumental methods.

QUIM 3085: ENVIRONMENTAL CHEMISTRY, three (3) credits, three (3) contact hours per week. Pre-requisites: QUIM 3042 and QUIM 3002. Effects of human behavior on the biosphere, with particular attention to the chemistry involved in the process.

QUIM 3086: ENVIRONMENTAL CHEMISTRY LAB, Pre-requisites: QUIM 3055 and QUIM 3025. Co-requisite: QUIM 3085. Methodology of environmental chemical analysis which provides practical experience in spectrophotometric, volumetric, potentiometric and chromatographic procedures used for the analysis of water, air and soil. It requires field trips.

QUIM 3450 ORGANIC CHEMISTRY FUNDAMENTALS, five (5) credits, four (4) lecture hours per week and four (4) laboratory hours per week. Pre-requisite: QUIM 3002 or TEQU 3003. Co-requisite: QUIM 3451. Study of the fundamental principles of organic chemistry. It emphasizes properties, reactions, synthesis, and reaction mechanisms of organic compounds.

QUIM 3451: ORGANIC CHEMISTRY FUNDAMENTALS LABORATORY, zero (0). Co-requisite: QUIM 3450. Laboratory experiences applying standard techniques used in the synthesis, purification and identification of organic compounds.

QUIM 3461: ORGANIC CHEMISTRY I, four (4) credits, three (3) contact hours per week. Pre-requisite: QUIM 3002, QUIM 3004. The study of carbon compounds in functional groups, nomenclature, stereochemistry, synthesis, reactions and mechanisms. Also included are: a brief introduction to infrared spectroscopy, magnetic and nuclear resonance and mass spectrometry.

QUIM 3462: ORGANIC CHEMISTRY II, four (4) credits, three (3) contact hours per week. Pre-requisites: QUIM 3461, QUIM 3463. A continuation of the study of the carbon compounds in functional groups, nomenclature, stereochemistry, synthesis, reactions and mechanisms, including infrared spectroscopy techniques, magnetic and nuclear resonance and mass spectrometry.

QUIM 3463: ORGANIC CHEMISTRY I LAB, zero (0) credits, four (4) contact hours per week. This course complements **QUIM 3461**. It includes methods analysis, purification, identification and synthesis of organic compounds.

QUIM 4011: INSTRUMENTAL ANALYSIS, three (3) credits, two (2) contact hours per week. Pre-requisites: QUIM 3025 or TEQU 2001. Co-requisite: QUIM 4012. Fundamentals of emission and absorption spectra, chromatography and electrochemistry. It includes the study of the instrumentation and analysis methods.

QUIM 4012: INSTRUMENTAL ANALYSIS LABORATORY, cero (0) credits, three (3) contact hours per week. Co-requisite: QUIM 4011. Qualitative and quantitative analysis practices using atomic and molecular spectroscopic methods. Includes chromatography and other current topics in instrumental analytical chemistry.

QUIM 4050: GENERAL BIOCHEMISTRY; three (3) credits, three (3) contact hours per week. Pre-requisites: QUIM 3463 or QUIM 3450. Fundamental concepts about chemical vital processes. Study of carbohydrates, lipids, aminoacids, proteins, nucleic acids, vitamins and enzymes.

QUIM 4999: UNDERGRADUATE RESEARCH; two (2) credits, six (6) contact hours per week. Pre-requisites: QUIM 3002 or TEQU 3002. Supervised research in chemistry related topics. Provide students experience and training in scientific research.

TEQU

TEQU 3001: GENERAL CHEMISTRY FOR TECHNOLOGY I, three (3) credits, three (3) contact hours per week. Co-requisite: TEQU 3002. Study and analysis of the following concepts: atomic structure, periodic table, stoichiometry, chemical bonding, molecular geometry, thermochemistry and gas laws. It emphasizes problem solving applied to industrial chemical processes.

TEQU 3002: GENERAL CHEMISTRY FOR TECHNOLOGY LABORATORY I, one (1) credit, three (3) contact hours per week. Co-requisite: TEQU 3001. Supervised practice of laboratory experiments related to the following concepts: atomic structure, periodic table, stoichiometry, chemical bonding, molecular geometry, thermochemistry and gas laws.

TEQU 3003: GENERAL CHEMISTRY FOR TECHNOLOGY II, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 3001. Co-requisite: TEQU 3004. Study and analysis of the following concepts: solutions, kinetics, chemical equilibrium, thermodynamics, electrochemistry and materials. It emphasizes problem solving applied to industrial chemical processes.

TEQU 3004: GENERAL CHEMISTRY FOR TECHNOLOGY LABORATORY II, one (1) credit, three (3) contact hours per week. Pre-requisite: TEQU 3002. Co-requisite: TEQU 3003. Supervised practice of laboratory experiments related to the following concepts: solutions, kinetics, chemical equilibrium, thermodynamics, electrochemistry and material science.

TEQU 3105: INTRODUCTION TO CHEMICAL ENGINEERING TECHNOLOGY, three (3) credits, three (3) contact hours per week. Study of mathematical, physical and chemical principles applied to chemical processes and unit operations.

TEQU 3106: COMPUTER APPLICATIONS IN CHEMICAL ENGINEERING TECHNOLOGY, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 3105. Study and application of basic principles in programming language and technical programs used in the field of Chemical Engineering Technology. It emphasizes the use of word processors, electronic data sheets and software for presentations.

TEQU 3107: MATERIAL AND ENERGY BALANCE, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 3105. Study of stoichiometry principles and calculations required to perform material and energy balances in a chemical process. Development of technical problems solving skills.

TEQU 3201: UNIT OPERATIONS I: FLUID MECHANICS, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 3107. Study of fluid flow fundamental principles. Design and operation of fluid flow systems.

TEQU 3202: UNIT OPERATIONS LABORATORY I, one (1) credit, three (3) contact hours per week. Pre-requisite: TEQU 3201. Supervised practice in the operation of equipment used to perform experiments in bench and pilot scale related to fluid flow, mechanic separation, and drying operations. Recording and evaluation of data used to prepare technical reports.

TEQU 3203: UNIT OPERATIONS II: HEAT TRANSFER, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 3201. Study of heat transfer modes, empirical relations, and analytical and graphical methods applied in the solution of problems related to the chemical processes.

TEQU 3204: UNIT OPERATIONS LABORATORY II, one (1) credit, three (3) contact hours per week. Pre-requisite: TEQU 3203. Supervised practice in the operation of equipment used to perform experiments in bench and pilot scale related to heat and mass transfer operations. Recording and evaluation of data used to prepare technical reports.

TEQU 3205: CHEMICAL PROCESSES SUPERVISION AND MANAGEMENT, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 3107. Study and application of managerial methods, production planning, quality, plant design and manufacturing budget in industrial chemical processes.

TEQU 4006: MATHEMATICAL TOPICS IN CHEMICAL ENGINEERING TECHNOLOGY, three (3) credits, three (3) contact hours per week. Pre-requisite: MATE 3031. Study of calculus and differential equations topics with applications to chemical engineering technology.

TEQU 4007: THERMODYNAMIC PRINCIPLES, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 3201. Study of the basic principles of thermodynamics, the first and second laws of thermodynamics, power and refrigeration cycles, fluids properties, and chemical equilibrium.

TEQU 4009: ADVANCED UNIT OPERATIONS, three (3) credits, three (3) contact hours per week. Pre-requisites: TEQU 3203. Study and discussion of mass transfer operations such as distillation, absorption, adsorption, stripping, humidification and extraction.

TEQU 4015: UNIT OPERATIONS TECHNIQUES, three (3) credits, two (2) contact hours per week. Pre-requisite: TEQU 4009. Co-requisite: TEQU 4020. Study of unit operations topics, with emphasis in research project development techniques.

TEQU 4016: ENVIRONMENTAL CONTROL, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 4009. Study of environmental pollution sources and the effects of the chemical industry on the environment. Description of methods and equipment used in environmental impact control. Includes environmental control topics in water resources, air and soil.

TEQU 4018: TECHNIQUES AND REGULATION OF THE PHARMACEUTICAL INDUSTRY, three (3) credits, three (3) contact hours per week. Study and discussion of local and federal regulations applicable to industrial chemical processes and the manufacturing industry in general.

TEQU 4020: UNIT OPERATIONS TECHNIQUES LABORATORY, zero (0) credits, three (3) contact hours per week. Co-requisite: TEQU 4015. Study of unit operations topics, with emphasis in supervised research and development projects. Recording and evaluation of data used to prepare a technical portfolio.

TEQU 4021: PROCESS CONTROL AND INSTRUMENTATION, three (3) credits, three (3) contact hours per week. Pre-requisite: MATE 3031. Co-requisite: TEQU 4022 and TEQU 4006. Study and evaluation of the dynamic models that describe a chemical process. Design of control strategies and process optimization.

TEQU 4022: PROCESS CONTROL AND INSTRUMENTATION LABORATORY, one (1) credit, three (3) contact hours per week. Co-requisite: TEQU 4021. Supervised practice in the operation of instruments and software required for simulation and optimization of industrial chemical processes.

TEQU 4037: CHEMICAL PROCESSES SEMINAR, one (1) credit, one (1) contact hour per week. Pre-requisite: TEQU 4009. Literature research oriented seminar in industrial chemical processes technology. Oral and written reports are required.

TEQU 4105: TOPICS IN CHEMICAL PROCESSES TECHNOLOGY, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 4015. Study and evaluation of selected Chemical Processes Technology related topics.

ELECTIVES

TEQU 4019: BIOCHEMISTRY APPLICATIONS IN TECHNOLOGY, three (3) credits, three (3) contact hours per week. Pre-requisite: QUIM 4005. Introduction to microbiology and biochemistry, kinetics of reaction catalyzed by enzymes, kinetics of substrate, yield and production of biomass in cultures and cells. Analysis of biological reactions.

TEQU 4025: METALLURGY, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 1003. The study of the relationship between mechanical properties of metals. It includes extractions, production, alloys, corrosion and malleability.

TEQU 4026: POLYMERS, three (3) credits, three (3) contact hours per week. Pre-requisite: QUIM 4005. It includes the discussion of crossed polymers, crystallization, molecular weight calculation, solvents, processing and cracking of polymers.

TEQU 4028: HYDRAULICS, three (3) credits, three (3) contact hours per week. Pre-requisite: FISI 1002, TEQU 2011. Statics and dynamics of fluids; fluids in pipelines; open canals and vents; centrifuge pump and hydraulic turbines.

TEQU 4029: SIMULATION, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 4005, TEQU 4009. The study of numerical analysis, statistical analysis of data; linear and non-linear techniques; solutions; simulations by digital computers.

TEQU 4035: ENERGY CONVERSION, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 4008. The study of the different energy conversion methods. It includes the discussion of conventional and modern methods such as vapor generators, turbines, fuel cells, thermonuclear plants, solar energy.

TEQU 4036: PRINCIPLES OF SOLAR ENERGY, three (3) credits, three (3) contact hours per week. Pre-requisite: TEQU 4008. Principles of solar radiation, methods of measuring solar radiation, transfer of energy into a collector, storage of thermal energy, active and passive systems of solar cells, indirect method of storing and using solar energy.

ARTICULATED TRANSFER PROGRAMS

DEPARTMENT OF EDUCATION

EDUCATION WITH UPR-CAYEY

The Department of Education offers an articulated transfer program with the University of Puerto Rico at Cayey for two concentrations in Bachelor's Degrees in Secondary Education: a concentration in Natural Sciences and a concentration in History.

Furthermore, it offers a Bachelor of Arts in Elementary Education with a concentration in Special Education. Students may take the first two years of these programs at UPR-Arecibo and transfer to UPR-Cayey without loss of credits or delay in curricular sequence.

Curricular sequences are continuously revised. Students are encouraged to check with their departments to be informed of the latest revisions.

BACHELOR OF ARTS IN SECONDARY EDUCATION WITH CONCENTRATION IN NATURAL SCIENCES⁶⁶ (0401)

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
BIOL 3011*	General Biology I	4
BIOL 3013*	General Biology I Laboratory	0
HUMA 3101	Western Civilization	3
CISO 3121	Intro. to Social Sciences	3
INGL 3101	Basic English I	3
INGL 3113	Basic English I Laboratory	0
MATE 3171	Pre-Calculus I	3
ESPA 3101	Basic Spanish I	3
TOTAL		19

Second Semester		
CODE	DESCRIPTION	CREDITS
BIOL 3012*	General Biology II	4
BIOL 3014*	General Biology II Laboratory	0
HUMA 3102	Western Civilization II	3
CISO 3122	Intro. to Social Sciences	3

⁶⁶ Starting the academic year 2018-2019 the transfer agreement will be cancelled. However, the program will continue in UPR Cayey.

MATE 3172	Pre-Calculus II	3
ESPA 3102	Basic Spanish II	3
INGL 3102	Basic English II	3
INGL 3114	Basic English II Laboratory	0
TOTAL		19

SECOND YEAR

First Semester

CODE	DESCRIPTION	CREDITS
INGL 3201	Grammar, Composition and Reading I	3
QUIM 3001*	General Chemistry	4
QUIM 3003*	Organic Chemistry I Laboratory	0
EDFU 3001	Human Growth and Development I	3
MATE 3031	Calculus I	4
TOTAL		14

Second Semester

CODE	DESCRIPTION	CREDITS
INGL 3202	Grammar, Composition and Reading II	3
EDFU 3007	Social Basis of Education	3
MUSI 3225	History of Music	3
QUIM 3002	General Chemistry II	4
QUIM 3004	Lab. General Chemistry II	0
TOTAL		13

Total Credits 65

**BACHELOR OF ARTS IN ELEMENTARY EDUCATION
WITH MAJOR IN SPECIAL EDUCATION⁶⁷
(0446)**

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
CIBI 3001	General Biology I	3
or		
CIFI 3001	Physical Sciences I	
HUMA 3101	Western Civilization	3
INGL 3101	Basic English I	3
INGL 3113	Basic English I Laboratory	0
MATE 3041	Intro. to Mathematics I	3
ESPA 3101	Basic Spanish I	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
CIBI 3002	General Biology II	3
or		
CIFI 3001	Physical Sciences II	
HUMA 3102	Western Civilization II	3
MATE 3042	Intro. to Mathematics II	3
ESPA 3102	Basic Spanish II	3
INGL 3102	Basic English II	3
INGL 3114	Basic English II Laboratory	0
TOTAL		15

⁶⁷ Starting the academic year 2018-2019 the transfer agreement will be cancelled. However, the program will continue in UPR Cayey.

SECOND YEAR**First Semester**

CODE	DESCRIPTION	CREDITS
INGL 3021	Oral and Written English I	3
CISO 3121	Intro. to Social Sciences I	3
HIST 3245	Compendium History of PR	3
EDFU 3001	Human Growth and Development I	3
TOTAL		12

Second Semester

CODE	DESCRIPTION	CREDITS
INGL 3022	Oral and Written English II	3
CISO 3122	Intro. to Social Sciences II	3
HIST 3111	American History I	3
or	or	
HIST 3112	American History II	
EDFU 3007	Social Basis of Education	3
TOTAL		12

Total Credits 54

EDUCATION WITH UPR-RÍO PIEDRAS

The Department of Education offers an articulated transfer program with the University of Puerto Rico at Río Piedras for five concentrations in Bachelor's Degrees in Secondary Education: Mathematics, Physics, Chemistry, and Teaching of English to Speakers of Spanish and Family Ecology. Students may take the first two years of these programs at UPR-Arecibo and transfer to UPR-Río Piedras without loss of credits or delay in curricular sequence. Furthermore, students may take the first year towards a Bachelor of Arts in Elementary Education with a concentration in Teaching of English to Speakers of Spanish.

Curricular sequences are continuously revised. Students are encouraged to check with their departments to be informed of the latest revisions.

BACHELOR OF ARTS IN SECONDARY EDUCATION WITH MAJOR IN TEACHING ENGLISH TO SPEAKERS OF SPANISH⁶⁸ (0411)

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3101 or ESPA 3001 or ESPA 3111	Basic Spanish I or its equivalent	3
INGL 3101 or INGL 3103 or INGL 3011	Basic English I or its equivalent	3
INGL 3113*	Basic English I Laboratory	0
CISO 3121	Intro. to Social Sciences I	3
CIFI 3001	Physical Science I	3
HUMA 3101	Western Civilization I	3
MATE 3041	Intro. to Mathematics I	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3102 or ESPA 3002 or ESPA 3112	Basic Spanish II or its equivalent	3
INGL 3102 or INGL 3104 or INGL 3012	Basic English II or its equivalent	3
INGL 3114*	Basic English II Laboratory*	0
CISO 3122	Intro. to Social Sciences II	3

⁶⁸ Laboratory is only for students who take INGL 3101-02.

CIFI 3002	Physical Science I	3
HUMA 3102	Western Civilization II	3
MATE 3042	Intro. to Mathematics II	3
TOTAL		18

SECOND YEAR

First Semester

CODE	DESCRIPTION	CREDITS
EDFU 3001	Human Growth and Development I	3
ESPA 3211	Intro. to Spanish Literature I	3
CIBI 3001	Biological Sciences I	3
HUMA 3201	Western Civilization III	3
INGL 3221	Intro. to Literature I	3
ARTE 3115	Art Appreciation	2
TOTAL		17

Second Semester

CODE	DESCRIPTION	CREDITS
EDFU 3002	Human Growth and Development II	3
ESPA 3212	Intro. to Spanish Literature II	3
CIBI 3002	Biological Sciences II	3
HUMA 3202	Western Civilization IV	3
INGL 3222	Intro. to Literature II	3
HIST 3241 or HIST 3242 or HIST 4245	History of Puerto Rico	3
TOTAL		18
Total Credits 71		

**BACHELOR OF ARTS IN ELEMENTARY EDUCATION
WITH CONCENTRATION IN TEACHING ENGLISH TO SPEAKERS OF SPANISH⁶⁹
(0425)**

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3101 or ESPA 3001 or ESPA 3111	Basic Spanish I or its equivalent	3
INGL 3101 or INGL 3103 or INGL 3011	Basic English I or its equivalent	3
INGL 3113*	Basic English I Laboratory	0
CISO 3121	Intro. to Social Sciences I	3
HUMA 3101	Western Civilization I	3
EDFU 3001	Human Growth and Development I	3
HIST 3241 or HIST 3242 or HIST 4245	History of Puerto Rico	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
ESPA 3102 or ESPA 3002 or ESPA 3112	Basic Spanish II or its equivalent	3
INGL 3102 or INGL 3104 or INGL 3012	Basic English II or its equivalent	3
INGL 3112*	Basic English II Laboratory*	0
CISO 3122	Intro. to Social Sciences II	3
HUMA 3102	Western Civilization II	3
HIST 3111 or HIST 3112	History of the U.S.	3
EDFU 3002	Human Growth and Development II	3
TOTAL		18
Total Credits		36

⁶⁹ The laboratory is only for students who take INGL 3101-3102.

ENGINEERING WITH UPR-MAYAGUEZ

The Physics-Chemistry Department offers seven engineering articulated transfer programs coordinated with the University of Puerto Rico, Mayagüez Campus: Civil, Electrical, Industrial, Computer, Mechanical and Chemical Engineering. All programs are accredited by the Accreditation Board for Engineering and Technology (ABET). The University of Puerto Rico at Arecibo offers the first two years of the programs.

MAJOR IN SURVEYING AND TOPOGRAPHY (0506)

This program is offered by the Civil Engineering Department. The study program for this concentration includes courses in the following areas: Surveying, Cartography, Photogrammetry and Geodesics.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3005* ⁷⁰	Pre-Calculus	5
QUIM 3131	General Chemistry I	3
QUIM 3133	General Chemistry I Laboratory	1
INGE 3011	Engineering Graphics I	2
INGL 3___*	A first year English Course	3
EDFI _____	An Elective in Physical Education	1
ESPA 3101*	Basic Spanish I	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3031	Calculus I	4
QUIM 3132	General Chemistry II	3
QUIM 3134	General Chemistry II Laboratory	1
INGE 3012	Engineering Graphics II	2
INGL 3___*	A first year English Course	3
EDFI _____	An elective in Physical Education	1
ESPA 3102*	Basic Spanish II	3
TOTAL		17

⁷⁰ * Subject to the student's College Board and SAT scores.

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3032	Calculus II	4
FISI 3171	Physics I	4
FISI 3173	Physics I Laboratory	1
INGE 3031	Applied Mechanics - Static	3
INGL 3__	Second year English Course	3
ECON 3021	Principles of Economy I	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3063	Calculus III	3
FISI 3172	Physics II	4
FISI 3174	Physics II Laboratory	1
INGE 3032	Applied Mechanics - Dynamics	3
INGL 3__	Second year English Course	3
INCI 4001	Topography I	3
INGE 3016	Algorithms and Computer Programming	3
TOTAL		20

**MAJOR IN COMPUTER ENGINEERING
(0507)**

The design, programming and installment of systems using computers and digital systems is the field of Computer Engineering. This branch of engineering unites two fields: the physical aspect of the computer and its operational logic, of which programming is an application. Some areas represented in the courses offered are: programming languages, structuring data, information systems, digital processing of signals, and construction of compilers, artificial intelligence and design of digital systems.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3005* ⁷¹	Pre-calculus	5
QUIM 3131	General Chemistry I	3
QUIM 3133	General Chemistry I Laboratory	1
INGE 3011	Engineering Graphics I	2
ENGL 3___*	At first year of English Course	3
EDFI	Elective in Physical Education	1
ESPA 3101*	Basic Spanish I	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3031	Calculus I	4
QUIM 3132	General Chemistry II	3
QUIM 3134	General Chemistry II Laboratory	1
INGL 3___*	First year English course	3
EDFI	An elective in Physical Education	1
ESPA 3102*	Basic Spanish II	3
ECON 3021	Principles of Economics I	3
TOTAL		18

⁷¹ * Subject to the student's College Board and SAT scores.

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3032	Calculus II	4
FISI 3171	Physics I	4
FISI 3173	Physics I Laboratory	1
INGE 3035	Mechanics Applied to Engineering	3
INGL 3__	Second year English*	3
INGE 3016	Algorithms and Computer Programming	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3063	Calculus III	3
FISI 3172	Physics II	4
FISI 3174	Physics II Laboratory	1
ELEC 3105	Analysis of Electrical Systems I	3
INGL 3__	Second year English	3
INGE 4001	Materials of Engineering	3
TOTAL		17

**MAJOR IN CIVIL ENGINEERING
(0501)**

Civil Engineering's special function is the plan, design, management, building, operation and sale related to infrastructure projects so necessary for the functioning of modern society. This infrastructure includes homes, office and industrial buildings, roads and transportation systems that connect centers of human activity, waterworks and sewers and other waste disposal systems, as well as hydraulic structures for flooding control. To develop the aforementioned projects civil engineering with different specializations are needed. The principal specializations are: Structural, Geotechnical, Environmental, Transportation, Roads, Hydrological, Sanitary and Construction.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3005* ⁷²	Pre-calculus	5
QUIM 3131	General Chemistry I	3
QUIM 3133	General Chemistry I Laboratory	1
INGE 3011	Engineering Graphics I	2
		3
ENGL 3___*	First year in English Course	
EDFI	Elective in Physical Education	1
ESPA 3101*	Basic Spanish I	3
	TOTAL	18

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3031	Calculus I	4
QUIM 3132	General Chemistry II	3
QUIM 3134	General Chemistry II Laboratory	1
ENGE 3012	Engineering Graphics II	2
INGL 3___*	First year in English Course	3
EDFI	Elective in Physical Education	1
ESPA 3102*	Spanish Basic II	3
	TOTAL	17

⁷² Subject to the student's College Board and SAT scores.

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3032	Calculus II	4
FISI 3171	Physic I	4
FISI 3173	Physic I Laboratory	1
INGE 3031	Engineering Mechanics-Dynamics	3
INGL 3__	Second year of English Course	3
INGE 3016	Algorithms and Computer Programming	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3063	Calculus III	3
FISI 3172	Physics II	4
FISI 3174	Physics II Laboratory	1
INGE 3032	Engineering Mechanics-Dynamics	3
INGL 3__	Second year of English Course	3
INGE 4011	Mechanics of Materials I	3
TOTAL		17

**MAJOR IN ELECTRICAL ENGINEERING
(0502)**

Electrical engineering deals with the production, transportation, conversion, manipulation, control and use of electric and magnetic energy. The electrical engineer can work in the areas of design, development of products and processes, manufacturing, marketing, maintenance, technical support, test engineer, advisor, researcher, and in our times more than ever, as a community leader. There are five areas in which electrical engineers prepare: potency, control, electronics, applied electromagnetism and signal processing.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3005* ⁷³	Pre-Calculus	5
QUIM 3131	General Chemistry I	3
QUIM 3133	General Chemistry I Laboratory	1
INGE 3011	Engineering Graphics I	2
INGL 3___*	First year course in English	3
EDFI	Elective in Physical Education	1
ESPA 3101*	Basic Spanish I	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3031	Calculus I	4
QUIM 3132	General Chemistry II	3
QUIM 3134	General Chemistry II Laboratory	1
INGL 3___*	First year English Course	3
EDFI	Elective in Physical Education	1
ESPA 3102*	Basic Spanish II	3
TOTAL		15

⁷³ *Subject to the student's College Board and SAT scores.

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3032	Calculus II	4
FISI 3171	Physics I	4
FISI 3173	Physics I Laboratory	1
INGE 3035	Engineering Mechanics	3
INGL 3__	Second year English Course	3
INGE 3016	Algorithms and Computer Programming	3
TOTAL		18

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3063	Calculus III	3
FISI 3172	Physics II	4
FISI 3174	Physics II Laboratory	1
INEL 3105	Electrical Systems Analysis I	3
INGL 3__	Second year English Course	3
INGE 3045	Materials Science for Electrical Engineers	3
TOTAL		17

**MAJOR IN INDUSTRIAL ENGINEERING
(0503)**

Industrial Engineering involves the design, improvement and installation of integrated systems of people, materials, information, equipment and energy. This branch of engineering uses specialized knowledge in mathematics, the physical and social science, along with the principles and methods of analysis and engineering design to specify, predict and evaluate obtained results of these systems. Its areas of study include: cost analysis and control, the design of statistical systems, optimizing and using human resources, engineering economy, the design of physical facilities, the design of computer systems for decision-making and automatic manufacture systems.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3005* ⁷⁴	Pre-Calculus	5
QUIM 3131	General Chemistry I	3
QUIM 3133	General Chemistry I Laboratory	1
INGL 3___*	First year English Course	3
Elective	Socio-Humanistic Elective	3
ESPA 3101*	Basic Spanish I	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3031	Calculus I	4
QUIM 3132	General Chemistry II	3
QUIM 3134	General Chemistry II Laboratory	1
INGE 3011	Engineering Graphics I	2
INGL 3___*	First year English Course	3
EDFI	Elective in Physical Education	1
ESPA 3102*	Basic Spanish II	3
TOTAL		17

⁷⁴ *Subject to the student's College Board and SAT scores.

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3032	Calculus II	4
FISI 3171	Physics I	4
FISI 3173	Physics I Laboratory	1
INGE 3031	Engineering Mechanics - Statics	3
INGL 3__	Second year in English Course	3
INGE 3016	Algorithms and Computer Programming	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3063	Calculus III	3
FISI 3172	Physics II	4
FISI 3174	Physics II Laboratory	1
INGE 3032	Engineering Mechanics - Dynamics	3
INGL 3__	Second year in English Course	3
INGE 4011	Mechanics of Materials I	3
EDFI	Elective in Physical Education	1
TOTAL		18

**MAJOR IN MECHANICAL ENGINEERING
(0504)**

Mechanical engineering is the study of the science of machines. This study permits the efficient application of an ensemble of knowledge and techniques to optimize the use of materials and sources of energy. The mechanical engineer can intelligently devise ways to complete a task, and has the necessary knowledge to design and build machinery and artifacts, and to establish and direct the industries that depend on the mechanical arts.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
QUIM 3131	General Chemistry I	3
QUIM 3133	General Chemistry I Laboratory	1
INGL 3__*	First year in English Course	3
ESPA 3101*	Basic Spanish I	3
INGE 3809	Creative Design I	3
Elective	Socio-Humanistic Elective	3
TOTAL		16

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3031	Calculus I	4
QUIM 3132	General Chemistry II	3
QUIM 3144	General Chemistry II Laboratory	1
INGL 3__*	First year English Course	3
ESPA 3102*	Basic Spanish II	3
INME 3810	Creative Design I	2
TOTAL		16

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3032	Calculus II	4
FISI 3171	Physics I	4
FISI 3173	Physics I Laboratory	1
INGE 3031	Engineering Mechanics- Statics	3
INGL 3___	Second year English Course	3
TOTAL		15

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3063	Calculus III	3
FISI 3172	Physics II	4
FISI 3174	Physics II Laboratory	1
INGE 3032	Engineering Mechanics - Dynamics	3
INGL 3____	Second year English Course	3
EDFI _____	Physical Education Elective	1
TOTAL		15

**MAJOR IN CHEMICAL ENGINEERING
(0505)**

Chemical Engineering deals with the development and operation of chemical processes. Industrial scale production of chemical substances is the prototype of this activity. It begins with a chemical substance that is synthesized or discovered in the research laboratory. This step is followed by the design of the process, that is, of all the plant units where the substance will be produced in great quantity. And, finally, when the plant has been built, it is necessary to maintain the process in operating condition.

FIRST YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3005*	Pre-Calculus	5
QUIM 3131	General Chemistry I	3
QUIM 3133	General Chemistry I Laboratory	1
INGL 3_____	First year in English Course	3
Elective	Elective in Socio-Humanistic	3
ESPA 3101	Basic Spanish	3
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3031	Calculus I	4
QUIM 3132	General Chemistry II	3
QUIM 3134	General Chemistry II Laboratory	1
INGE 3011	Engineering Graphics I	2
ENGL 3_____*	First year in English Course	3
EDFI	Elective in Physical Education	2
ESPA 3102	Basic Spanish II	3
TOTAL		18

SECOND YEAR

First Semester		
CODE	DESCRIPTION	CREDITS
MATE 3032*	Calculus II	4
FISI 3171	Physics I	4
FISI 3173	Physics I Laboratory	1
QUIM 3450	Fundamentals of Organic Chemistry	5
INGL 3 ____*	Second year in English Course	3
Elective	Elective	1
TOTAL		18

Second Semester		
CODE	DESCRIPTION	CREDITS
MATE 3063	Calculus III	3
FISI 3172	Physics II	4
FISI 3174	Physics II Laboratory	1
QUIM 3055	Analytical Chemistry	4
INGL 3 ____*	Second Year in English Course	3
INGE 3016	Algorithms and Computer Programming	3
TOTAL		18

LIST OF COURSES

INEL

INEL 3105: ELECTRICAL SYSTEMS ANALYSIS, three (3) credits, three (3) lecture hours per week. Pre-requisites: MATE 3032 or MATE 3184. Co-requisites: PHSC 3172 or PHYS 3162 and MATE 3063 or MATE 3185. Analysis of direct current and alternating current linear electric circuits, laws and concepts that characterize their behavior.

INGE

INGE 3011: ENGINEERING GRAPHICS I, two (2) credits, one (1) lecture hours and two one and half (2 ½) hours laboratories per week. Principles of graphic language. Fundamentals of delineation, analysis and solution of space problems, symbols and standards applied in engineering. Freehand drawing as a tool for visualization. Principles of orthographic projection, sections, auxiliary views and conventional practices. Pictorial drawings: axonometric, oblique and perspective. Introduction to descriptive geometry. Hand and computer aided drawing.

INGE 3012: ENGINEERING GRAPHICS II, two (2) credits. Two hours of lecture-drawing periods per week. Pre-requisite: INGE 3011. Underlying principles of the graphic language: fundamentals of delineation, analysis and solution of space problems, symbols and standards applied in engineering, spatial geometry: distances between planes and lines, angles between lines and planes, rotation problems. Introduction to graphical mathematics and nomography.

INGE 3016: ALGORITHMS AND COMPUTER PROGRAMMING, three (3) credits, three (3) lecture hours per week. Pre-requisites: MATE 3172. Development of algorithms and their implementation in a structured high level language. Programming techniques applied to the solution of engineering and mathematical problems.

INGE 3017: COMPUTER AIDED GRAPHICS, two (2) credits. Two hours of lecture – laboratory per week. Fundamentals of computer aided graphics in engineering. Description of the equipment, use of commercial solid modeling programs, modeling of geometric figures and documentation.

INGE 3031: ENGINEERING MECHANICS - STATICS, three (3) credits, three (3) lecture hours per week. Pre-requisites: MATE 3031 or MATE 3144 or MATE 3183. Analysis of force systems; the laws of equilibrium; analysis of simple structures; distributed loads; friction; centroids and moments of inertia.

INGE 3032: ENGINEERING MECHANICS - DYNAMICS, three (3) credits, three (3) lecture hours per week. Pre-requisite: INGE 3031 and (FISI 3161 or FISI 3171). Kinematics of particles and rigid bodies; relations among force, mass and acceleration; kinetics of particles and rigid bodies; work and energy; impulse and momentum.

INGE 3035: ENGINEERING MECHANICS, three (3) credits, three (3) lecture hours per week. Pre-requisites: MATE 3031 or MATE 3144 or MATE 3183, FISI 3161 or FISI 3171. Analysis of force systems: the laws of equilibrium, friction, centroids and moments of inertia. Kinematics and dynamics of particles and rigid bodies.

INGE 3045: MATERIALS SCIENCE FOR ELECTRICAL ENGINEERS, three (3) credits, three (3) lecture hours per week. Pre-requisites: QUIM 3002. Co-requisite: FISI 3161 or FISI 3172. Principles that determine the properties of conductors, semiconductors, and insulators. Electromechanical properties: diffusion, electrical conduction, thermal conduction: magnetic and optical properties.

INGE 4001: ENGINEERING MATERIALS, three (3) credits, three (3) lecture hours per week. Pre-requisites: QUIM 3002 or QUIM 3042 and FISI 3161 or FISI 3171. A study of the basic principles that govern the properties and behavior of engineering materials: atomic structures, inter-atomic forces, amorphous and crystalline structures; phase transformations; mechanical properties; the study of capabilities and limitations of different materials, metals, polymers, ceramics and composites; introduction to corrosion.

INGE 4011: MECHANICS OF MATERIALS I, three (3) credits, three (3) lecture hours per week. Stresses and strains due to axial, torsional, and bending loads; shear and moment diagrams.

INGE 4012: MECHANICS OF MATERIALS II, three (3) credits, three (3) lecture hours per week. Pre-requisites: INGE 4011 and (MATE 3063 or MATE 3185). Analysis of statically determinate and indeterminate beams; stresses due to combined load; stress and strain transformation; column theory.

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Keila González
Graphic Designer

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