Undergraduate & Graduate Academic Catalog 2011-2012
Note: The programs, policies, requirements, and regulations published in this catalog are continually subject to review in order to serve the needs of the University’s various publics and to respond to the mandates of the Commission for Independent Education, Florida Department of Education. Changes in programs, policies, requirements, and regulations may be made without advance notice.
BOARD OF TRUSTEES

Rene De Cristina, President
Ricardo Jaen Presno, Vice President
Edna Vazquez Bonnet, Secretary
Luis Carreras Acevedo, Treasurer
     Luis Fullana
     Maria Magdalena Diaz Vila
     Irving A. Jiménez Juarbe
     Jenaro Negrón

ADMINISTRATIVE OFFICIALS

Ernesto Vázquez Barquet, BBA, MBA, President
Miguel Riestra, PhD, Vice President of Academic Affairs
Carlos A. Pérez, BBA, MBA, Vice President of Enrollment and Students Services
Ernesto Vázquez Martínez, Vice President of Administration and Finance
     Sylvia Cáceres, PhD, Campus Director
     Mayra I. López, BA, MA, Director of Registrar’s Office
     Sergio Viloldo, Financial Aid Office Administrator
     Mirta Colón Rodríguez, BA, MLS, Director of Library
     Teresa Cardona, Director of Recruitment and Admission
     Wilfred Fonseca, PhD, Academic Director
     Luis Mercado, MA, Promotion and Admission Director
Iris Soto-Gutiérrez, BA, MBA, Administrative Affairs Coordinator
     Cynthia Gómez, Academic Assistant
     Ileana Díaz, BBA, MALR, Financial Aid Officer
Gianira M. Molinary, BBA, MBA, MEM, Registrar Officer
     Marving A. Jiménez, BBA, Finance Officer
     Damaris Alvarez, Promotions and Admissions Officer
     Judith Negrón, BA, MAEd, Library Technician and Placement Officer

Revised July 30, 2011
CONTENTS

PREFACE ............................................................................................................................................... 1
ACADEMIC CALENDAR 2011-2012 ............................................................................................. 2
ORLANDO CAMPUS .................................................................................................................. 2
PRESIDENT'S MESSAGE ........................................................................................................... 6
I. GENERAL INFORMATION ........................................................................................................ 7
   HISTORY ......................................................................................................................................... 7
   MISSION ......................................................................................................................................... 7
   VISION ........................................................................................................................................... 7
II. ADMISSION ................................................................................................................................... 10
   PROCEDURE ............................................................................................................................... 10
   DEGREE STUDENTS .................................................................................................................. 11
   TRANSFER STUDENTS ............................................................................................................. 11
   INTERNAL TRANSFER STUDENTS .......................................................................................... 12
   INTERNATIONAL STUDENTS .................................................................................................. 13
   NON-DEGREE SEEKING Students ........................................................................................... 14
   NON-DEGREE SEEKING Students to Regular Student Status .................................................. 14
III. UNIVERSITY OPERATIONS .................................................................................................. 15
   ACADEMIC INFORMATION AND SERVICES ........................................................................ 15
   ACADEMIC SCHEDULE ........................................................................................................... 15
   ACADEMIC LOAD .................................................................................................................... 15
   ACADEMIC PROGRESS REVIEW PROCEDURES ................................................................ 19
   RIGHT TO APPEAL .................................................................................................................... 20
   GRADUATION APPLICATION .................................................................................................. 24
   GRADUATION REQUIREMENTS .............................................................................................. 24
IV. ARTICULATIONS .................................................................................................................. 28
V. FINANCIAL INFORMATION AND SERVICES ................................................................. 32
VI. STUDENT INFORMATION AND SERVICES ........................................................................ 43
   STUDENT SERVICES .................................................................................................................. 43
   REGISTRAR’S OFFICE ................................................................................................................. 43
   STUDENT COUNCIL AND STUDENT ORGANIZATIONS AND ACTIVITIES ..........43
VII. UNDERGRADUATE PROGRAMS ....................................................................................... 50
   SCHOOL OF MANAGEMENT ...................................................................................................... 50
      PROGRAM ENTRANCE ............................................................................................................. 51
      BACHELOR OF BUSINESS ADMINISTRATION PROGRAM .............................................. 51
      BACHELOR OF SCIENCE IN ORGANIZATIONAL MANAGEMENT PROGRAM ..........56
   SCHOOL OF ENGINEERING ..................................................................................................... 59
      PROGRAM ENTRANCE ............................................................................................................. 60
      BACHELOR OF SCIENCE IN CIVIL ENGINEERING (BSCE) ............................................. 60
      BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (BSEE) .............................. 66
      BACHELOR OF SCIENCE IN COMPUTER ENGINEERING (BSCoE) ......................... 71
      BACHELOR OF SCIENCE IN COMPUTER SCIENCE ....................................................... 73
VIII. UNDERGRADUATE COURSE DESCRIPTIONS ............................................................... 76
IX. GRADUATE PROGRAMS ...................................................................................................... 108
   MASTER IN BUSINESS ADMINISTRATION (MBA) ............................................................. 110
   MASTER IN ENGINEERING MANAGEMENT (MEM) ......................................................... 112
X. GRADUATE COURSE DESCRIPTIONS .................................................................................. 115
XI. FACULTY ............................................................................................................................... 120
   UNDERGRADUATE FACULTY ............................................................................................... 120
   GRADUATE FACULTY ............................................................................................................... 122
PREFACE

This publication serves as a supplement to the current Polytechnic University of Puerto Rico Catalog and focuses on the degree offerings for Polytechnic University of Puerto Rico - Orlando Campus, Orlando, Florida location. It contains essential information needed by students about the curriculum, policies and procedures, student life, and finances related to Polytechnic University of Puerto Rico - Orlando Campus. A Catalog for Polytechnic University of Puerto Rico is available for reference at the Orlando, Miami or San Juan campuses.

While this Catalog is prepared on the basis of the best information available at the time of publication, all information including statements of fees, course offerings, admission, and graduation requirements is subject to change without notice or obligation. The University therefore reserves the right to change any section or part of the Catalog and to make such changes applicable to students currently enrolled as well as to new students.
## ACADEMIC CALENDAR 2011-2012

### ORLANDO CAMPUS

### Fall 2011

*August 8 thru October 29, 2011*

<table>
<thead>
<tr>
<th>Event</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>August 1 - 6</td>
</tr>
<tr>
<td>New Student Orientation</td>
<td>August 3</td>
</tr>
<tr>
<td>Classes Begin</td>
<td>August 8</td>
</tr>
<tr>
<td>Late Registration/Changes</td>
<td>August 8 - 12</td>
</tr>
<tr>
<td>100% Refund for Partial and/or Full Withdrawal</td>
<td>August 8 - 12</td>
</tr>
<tr>
<td>Last date of Partial and/or Full Withdrawal with a refund of 33.00% (tuition of the term)</td>
<td>August 15 - 19</td>
</tr>
<tr>
<td>Deadline to Remove Incomplete Grades from SU-11 and SP-11</td>
<td>September 15</td>
</tr>
<tr>
<td>Midterm Exams</td>
<td>September 12 - 17</td>
</tr>
<tr>
<td>Pre- Registration for Next Term WI-11 Begin</td>
<td>September 26</td>
</tr>
<tr>
<td>Withdrawal Deadline</td>
<td>October 13</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>October 24 - 29</td>
</tr>
<tr>
<td>Academic Recess</td>
<td>October 31- November 13</td>
</tr>
<tr>
<td>Grades Due in Registrar’s Office</td>
<td>November 2</td>
</tr>
<tr>
<td>Registration for Next Term WI-11</td>
<td>November 7 - 12</td>
</tr>
</tbody>
</table>

### Holidays

<table>
<thead>
<tr>
<th>Holiday</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor Day</td>
<td>September 5</td>
</tr>
<tr>
<td>Columbus Day</td>
<td>October 10</td>
</tr>
<tr>
<td>Veteran’s Day</td>
<td>November 11</td>
</tr>
</tbody>
</table>

**Classes scheduled on a holiday will be rescheduled as follows:**

<table>
<thead>
<tr>
<th>Holiday</th>
<th>Rescheduled Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor Day</td>
<td>Saturday, Sept. 10</td>
</tr>
<tr>
<td>Columbus Day</td>
<td>Saturday, Oct. 15</td>
</tr>
<tr>
<td>Veteran’s Day</td>
<td>Not applicable – Academic Recess</td>
</tr>
</tbody>
</table>
ACADEMIC CALENDAR 2011-2012

ORLANDO CAMPUS

Winter 2011
November 14, 2011 thru February 18, 2012

Registration
New Student Orientation
Classes Begin
Late Registration/Changes
100% Refund for Partial and/or Full Withdrawal
Last date of Partial and/or Full Withdrawal with a refund of
33.00% (tuition of the term)
Deadline to Apply for Graduation for June 2012
Deadline to Remove Incomplete Grades from FA-11
Midterm Exams
Christmas Recess
Pre-Registration for Next Term SP-12 Begin
Withdrawal Deadline
Final Examinations
Academic Recess
Grades Due in Registrar’s Office
Registration for Next Term SP-12

Holidays

Thanksgiving
Martin Luther King, Jr. Day
President’s Day

Classes scheduled on a holiday will be rescheduled as follows:

Thanksgiving (Saturday Classes)
Thanksgiving (Thursday Classes)
Martin Luther King, Jr. Day
President’s Day

November 7 - 12
November 9
November 14
November 14 - 18
November 14 - 18
November 21 - 23
December 9
December 22
December 19 - 22
January 17
February 2
February 13 – 18
February 20 – March 4
February 22
February 27 – March 3

November 24 – 26
January 16
February 20

Monday, November 28
Saturday, December 3
Saturday, January 21
Not applicable – Academic Recess
**ACADEMIC CALENDAR 2011-2012**

**ORLANDO CAMPUS**

**Spring 2012**

*March 5 thru May 26, 2012*

<table>
<thead>
<tr>
<th>Event</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>February 27 - March 3</td>
</tr>
<tr>
<td>New Student Orientation</td>
<td>February 29</td>
</tr>
<tr>
<td>Classes Begin</td>
<td>March 5</td>
</tr>
<tr>
<td>Late Registration/Changes</td>
<td>March 5 - 9</td>
</tr>
<tr>
<td>100% Refund for Partial and/or Full Withdrawal</td>
<td>March 5 - 9</td>
</tr>
<tr>
<td>Last date of Partial and/or Full Withdrawal</td>
<td>March 12 - 16</td>
</tr>
<tr>
<td>33.00% (tuition of the term)</td>
<td>March 12 - 16</td>
</tr>
<tr>
<td>Deadline to Remove Incomplete Grades from WI-11</td>
<td>April 12</td>
</tr>
<tr>
<td>Midterm Exams</td>
<td>April 9 – 14</td>
</tr>
<tr>
<td>Academic and Administrative Recess (Holy Week)</td>
<td>April 5 – 7</td>
</tr>
<tr>
<td>Pre-Registration for Next Term SU-12 &amp; FA-12 Begin</td>
<td>April 23</td>
</tr>
<tr>
<td>Withdrawal Deadline</td>
<td>May 10</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>May 21-26</td>
</tr>
<tr>
<td>Academic Recess</td>
<td>May 28 – June 10</td>
</tr>
<tr>
<td>Grades Due in Registrar’s Office</td>
<td>May 31</td>
</tr>
<tr>
<td>Registration for SU-12</td>
<td>June 4-9</td>
</tr>
</tbody>
</table>

**Holidays**

<table>
<thead>
<tr>
<th>Event</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holy Thursday</td>
<td>April 5</td>
</tr>
<tr>
<td>Good Friday</td>
<td>No classes scheduled</td>
</tr>
<tr>
<td>Memorial Day</td>
<td>May 28</td>
</tr>
</tbody>
</table>

**Classes scheduled on a holiday will be rescheduled as follows:**

<table>
<thead>
<tr>
<th>Event</th>
<th>Rescheduled Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holy Thursday</td>
<td>Saturday, April 14</td>
</tr>
<tr>
<td>Holy Week (Saturday Classes)</td>
<td>Monday, April 9</td>
</tr>
<tr>
<td>Memorial Day</td>
<td>Not applicable – Academic Recess</td>
</tr>
</tbody>
</table>
### Academic Calendar 2011-2012

**Orlando Campus**

**Summer 2012**  
*June 11 thru July 21, 2012*

<table>
<thead>
<tr>
<th>Event</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>June 4 - 9</td>
</tr>
<tr>
<td>New Student Orientation</td>
<td>June 6</td>
</tr>
<tr>
<td>Classes Begin</td>
<td>June 11</td>
</tr>
<tr>
<td>Late Registration/Changes</td>
<td>June 11 - 15</td>
</tr>
<tr>
<td>100% Refund for Partial and/or Full Withdrawal</td>
<td>June 11 - 15</td>
</tr>
<tr>
<td>Last date of Partial and/or Full Withdrawal with a refund of 33.00% (tuition of the term)</td>
<td>June 18 - 22</td>
</tr>
<tr>
<td>Midterm Exams</td>
<td>June 25 - 29</td>
</tr>
<tr>
<td>Withdrawal Deadline</td>
<td>July 5</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>July 16 - 20</td>
</tr>
<tr>
<td>Grades Due in Registrar’s Office</td>
<td>July 26</td>
</tr>
<tr>
<td>Academic Recess</td>
<td>July 23 - August 5</td>
</tr>
<tr>
<td>Registration for Next Term FA-12</td>
<td>July 30 – August 4</td>
</tr>
</tbody>
</table>

**Holiday**

<table>
<thead>
<tr>
<th>Holiday</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independence Day</td>
<td>July 4</td>
</tr>
</tbody>
</table>

**Classes scheduled on a holiday will be rescheduled as follows:**

<table>
<thead>
<tr>
<th>Holiday</th>
<th>Rescheduled Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independence Day</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>
PRESIDENT’S MESSAGE

You are embarking on a great journey that can ultimately afford you professional and personal success, a higher education degree. Education is the foundation to your future and we are proud you chose Polytechnic University of Puerto Rico - Orlando Campus.

Polytechnic University of Puerto Rico - Orlando Campus is here to support you academically in your endeavors and extends an open invitation to seek our assistance for academic advising, career counseling, placement opportunities or other related career and university issues. We are dedicated professionals, committed to quality education and community. Your success as a student is important to us.

Welcome!

Sincerely,

Ernesto Vázquez-Barquet
President
I. GENERAL INFORMATION

HISTORY

Polytechnic University of Puerto Rico (PUPR) is a private, nonprofit, coeducational nonsectarian institution founded in 1966. Until 1974, it offered specialized courses in Land Surveying and Mapping. In 1974, PUPR became a degree granting institution with Bachelor of Science in Land Surveying and Mapping (BSLS) and a Bachelor of Science in Civil Engineering (BSCE) followed by Bachelor of Science in Industrial Engineering (1980), Bachelor of Science in Electrical Engineering (1984), Bachelor of Science in Mechanical Engineering (1987), and Bachelor of Business Administration with a major in Industrial Management (1990). In 1992, the institution started offering a graduate program, a Master’s Degree in Engineering Management. In 1995, a Bachelor in Architecture program was initiated. Bachelor of Science in Chemical Engineering and a Bachelor of Science in Environmental Engineering were initiated in 1997. Also in 1998 the Master in Business Administration, Master of Science in Civil Engineering, Master of Science and Master of Engineering in Manufacturing Engineering, Master in Environmental Management, Master of Engineering in Civil Engineering, and Master of Science and Master in Manufacturing Competitiveness.

Polytechnic University of Puerto Rico in Orlando and Miami are Campuses of Polytechnic University of Puerto Rico, which is fully accredited and internationally recognized in the fields of engineering, architecture, computer sciences and business management and administration. PUPR is the nation’s second largest institution of higher education graduating Hispanic engineers. Currently, there are over 5,000 students at the San Juan campus.

The demand for increased higher education services to targeted Orlando and Miami audiences as well as responding to the State of Florida’s big need for increased Baccalaureate degrees prompted university officials to study, analyze and plan for new curriculum and degree programs. Curriculum is designed with a meaningful career choice in mind, and graduates will be able to identify available career opportunities.

MISSION

Provide opportunities for leadership, productivity and competitiveness in a global marketplace for individuals from diverse backgrounds while enhancing their intellectual curiosity, humanistic values, and technological competencies that stimulates greater social responsibility and improves the quality of life.

VISION

To be recognized as a leading higher education institution that meets high academic standards with international competitiveness and provides students opportunities for educational, professional and personal growth through collaboration and application.
GUIDING PRINCIPLES
- Commitment to Excellence
- Professionalism and Integrity
- Teamwork
- Diversity
- Creativity and Innovation

GOALS
- To provide access of higher education for degree and non-degree Floridian population to improve their academic and competitive formation as an enhancement of our community.
- To develop a social contribution by forming an ethical committed professional involved in the economic development of the state.
- To develop the professional characteristics of an individual to be able to apply critical thinking and scientific approach to complex problems.
- To provide the latest technology in the application of engineering and management problem solutions.
- To support the socio-economic development of the state by generating highly qualified professionals dedicated to improve their social responsibility.
- To provide the adequate partnerships (Industry, Government, Businesses, and Professional Associations, High Education Institutions) for the students practical experience development and support the strength of the professional tools for their future.
- To provide the global market skills to develop an international professional with a broader span of knowledge.

ACCREDITATION

LICENSURE and CERTIFICATION
Many of the University’s courses and programs provide knowledge that may support a student’s efforts toward various licensures or certifications. However, these courses and curricula are not necessarily designed to meet various requirements among individual states guidelines. It is the responsibility of each student to check with regional authorities to confirm requirements in preparation for licensures and certifications.

The school is licensed by the Commission for Independent Education, 325 West Gaines Street, Suite 1414, Tallahassee, FL 32399-0400. (850) 245-3200.

- San Juan Campus: Accreditation Board for Engineering and Technology (ABET), International Assembly for Collegiate Business (IACBE) and National Architectural Accrediting Board (NAAB)

STATEMENT OF NON-DISCRIMINATION
Polytechnic University of Puerto Rico - Orlando Campus does not discriminate on the basis of race, religion, age, disability, sex, or national origin in the administration of its educational and admission policies, scholarship and loan programs, or other university administered programs.
CONTACT INFORMATION
Polytechnic University of Puerto Rico
Orlando Campus
550 Econlockhatchee Trail
Orlando, Florida 32825
Phone: (407) 677-7000
Fax: (407) 677-5082
Toll Fee: (877) 577-POLY
Web: www.pupr.edu/orlando

FACILITY – POLYTECHNIC UNIVERSITY OF PUERTO RICO - ORLANDO CAMPUS
The Orlando Campus is located on a sixteen acre property in the Northeast area of Orlando, Florida. The campus consists of a main building, which houses administrative offices, classrooms, computer labs, engineering lab, electrical engineering lab, science lab, library, student and faculty lounge, indoor basketball court and outdoor athletic field and recreational areas for students.

DIRECTIONS – POLYTECHNIC UNIVERSITY OF PUERTO RICO - ORLANDO CAMPUS
From downtown Orlando:
Take Highway 408 East to Valencia College Lane (Right Exit).
Turn right (East) on Econlockhatchee Trail.

MAP – ORLANDO CAMPUS
II. ADMISSION

PROCEDURE

All students who have graduated from a recognized high school or equivalent (GED) prior to applying for admission to Polytechnic University of Puerto Rico - Orlando Campus must:

- Submit a completed application for admission with a thirty-dollar ($30) non-refundable for undergraduate and fifty dollars ($50) non-refundable for Graduate Programs. This application fee does not apply toward registration charges.
- Request an Official GED or High School transcript or an official college or university transcript. For Graduate Programs request an official transcript from the college or university that conferred the Bachelors Degree. Transcript(s) should be sent directly from the institution(s) to Polytechnic University of Puerto Rico - Orlando Campus Admissions Office. Student copies of transcripts will not be accepted. Transcripts must furnish a statement of good standing.
- Provide evidence of citizenship or legal resident status (birth certificate or U.S. passport, permanent resident card or any other document that proves legal status in the United States).
- Provide a copy of a current driver’s license or photo identification for placement in the files for official records upon acceptance to a degree program at the university.
- Graduate Programs request (3) Recommendations Letters. (Two must be professionals recommendations)

Entrance
Applicants must have a minimum high school grade point average depending of the program of interest:

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Minimum H.S. GPA Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>2.50</td>
</tr>
<tr>
<td>Computer Science</td>
<td>2.00</td>
</tr>
<tr>
<td>Business/Management</td>
<td>2.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Graduate Programs</th>
<th>Minimum Bachelor GPA Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.50</td>
</tr>
</tbody>
</table>

Applicants, who do not meet the stated high school grade point average, can request, in writing, special consideration by the Admission Committee due to extenuating circumstances.

Transfer students applying to the university must have a minimum of a 2.0 GPA. Applicants with less than a 2.0 GPA can request to the Admission Committee acceptance into the university on a conditional status. Final determination is at the discretion of the Admission Committee.

Polytechnic University of Puerto Rico - Orlando Campus grants entrance to students with consideration to:
- Past academic performance
- Rapport and mature intervention
- Recognition of ability and potential
- Evidence of personal drive
Desire to learn and plan for obtaining a degree. Special attention and support is given to individuals as follows:

- Talented students who, for socio cultural reasons, denote disadvantages in their knowledge and skills.
- Individuals who, for different reasons, could not complete a previously enrolled Bachelor’s Degree program in Engineering, Computer Science, or Business Administration.
- Individuals who have attained, or are on the way of attaining a college degree, but want to change their fields of specialization.
- Professionals who strive for self improvement and who want to continue their development, either in their own field or in a new specialization.
- Individuals who at a mature age want to initiate university studies. Admission is based upon educational preparation; evidenced abilities necessary for academic success, minimum GPA of 2.0 must be earned for admission. Demonstrated personal potential to accept and commit to the rigors of academic life. Each applicant is accorded individual consideration through an Admission Committee review and notification process. An Admission Application and the corresponding fee are valid for one academic year.

The institution reserves the right to admit, on a temporary status or reject, any applicant who fails to meet any criteria.

**DEGREE STUDENTS**

A degree student is seeking a Bachelor’s or Master’s Degree in any one of the curriculum areas the university offers. An undergraduate degree seeking student is classified as follows:

- First year student (Freshman) — a student who has passed between 0 and 30 credit hours.
- Second year student (Sophomore) — a student who has passed between 31 and 60 credit hours.
- Third year student (Junior) — a student who has passed between 61 and 90 credit hours.
- Fourth year student (Senior) — a student who has passed between 91 and above credit hours.

Classification of all students is made by the Office of the Registrar at the beginning of each academic year.

**TRANSFER STUDENTS**

An applicant who has studied at a recognized institution of higher education may apply for admission as a transfer student. They will be favorably considered for all academic work completed with a grade of “C” or higher at each prior institution for undergraduate programs; or a grade of “B” or higher for graduate programs.

A transfer applicant will not be considered if he/she is on academic probation, suspension or dismissal from the previous institution; if he/she would be on academic probation upon return to the previous institution; or if on disciplinary probation during or following the last term at the previous institution; or within one (1) year after dismissal. Applicants with less than the
minimum GPA can request to the Admission Committee acceptance into the university on a conditional status. Final determination is at the discretion of the Admission Committee.

Any undergraduate student applying for admission to Polytechnic University of Puerto Rico (Orlando Campus) should know that only two thirds of the total number of credits required for the degree can be awarded as transfer credits, including no more than half of the specialization’s credit requirements. The courses and credits that will be transferred to a student for the program they are enrolling in will be based on the academic program requirement. Transferred grades will not be used for the evaluation of her/his Grade Point Average. All transfer students must approve at Polytechnic University of Puerto Rico no less than 65% of the credits required for graduation to be eligible for academic honors.

Any graduate student applying for admission to Polytechnic University of Puerto Rico (Orlando Campus) should know that only 18 credits required for the degree can be awarded as transfer credits, including no more than half of the specialization’s credit requirements. Graduate students requesting transfer credits from our institution MEM program to the MBA program, or vice versa, will be awarded with only the 18 credits of the core courses. Courses already taken and not transferred should be substituted by other program courses.

**INTERNAL TRANSFER STUDENTS**

Internal Transfer Students (Students transferred between Polytechnic University Campuses).

1. Any student requesting a transfer from one campus to another should request from the campus of origin the following documents:
   - Complete an Authorization for Internal Transfer and forward to the transferring campus.
   - Official transcript.
   - The student’s academic file from the Registrar’s Office to the campus where the student is transferring.
2. If the student has previously studied at the campus transferring to, he/she should apply for readmission.
3. If the student has not previously studied at the campus transferring to, he/she should apply for an internal transfer at the Admissions Office.
4. The student must complete a minimum of 36 credits of the Bachelor Degree or 12 credits of the Master Degree in the Orlando Campus to be considered for admission.

All the courses and credits from the previous campus will be transferred to the program he/she is enrolling in. The additional courses analysis for the completion of the program will be based on the academic program requirements. However, all the attended credits under the same institution will be used to determine the student Grade Point Average.

An internal transfer student will not be considered if he/she is on academic probation, suspension or dismissal from the previous institution; if he/she would be on academic probation upon return to the previous institution; or if on disciplinary probation during or following the last term at the previous institution; or within one (1) year after dismissal. Applicants with less than the minimum GPA can request to the Admission Committee acceptance into the university on a conditional status. Final determination is at the discretion of the Admission Committee.
INTERNATIONAL STUDENTS

All instruction and written work at Polytechnic University is in English. Students whose primary language is not English must provide proof of English capacity. The standard measure of this ability is a score on the TOEFL (Test of English as a Foreign Language). The applicant should provide a minimum score of 79 (internet based test), 213 (computer based test), or 550 (paper test) to enter the regular program courses. If TOEFL is not provided or does not comply with the minimum score, an English proficiency test will be given by the Admission Office to assess his/her abilities and prepare a development plan.

The University is approved by the Immigration and Naturalization Services (INS) to issue a Certificate of Eligibility for Nonimmigrant (F-1) Student Status for qualified international students. Following admission acceptance, the applicant must submit all documentation required by the INS. Upon approval, the Student and Faculty Services Department will issue the I-20 to qualified applicants following receipt of all required documents and paid registration fees for the first academic term of full-time enrollment.

Applicants who are not United States of America citizens or permanent residents must petition Polytechnic University of Puerto Rico - Orlando Campus to issue official forms required by the Bureau of Immigration and Citizenship Services (BICS). Upon completion of these forms and acceptance, these applicants will be classified as international students.

An applicant desiring to enroll as an international student must submit the following documents:

International Applicants with Form I-20

1. Complete the Application for Admission.
2. Pay a $150.00 Admission Fee (non-refundable).
3. Submit an official transcript certified by the education institution and validated by the Ministry of Education of the applicant’s home country as well as a USA academic equivalence certification for that degree certified by an accredited evaluation firm (Josef Silney, World Education Services, etc.). The academic equivalence certification must include the equivalent USA degree with a detailed evaluation, course by course, of an official transcript from the education institution in the candidate’s home country. The document must be sent directly from the institution to the Admission Office of Polytechnic University of Puerto Rico - Orlando Campus.
4. Submit three letters of recommendation.
5. Demonstrate financial capacity to complete the required program, if personally by means of a funds availability certificate from the candidate’s banking institution or:
   a. Submit a sworn statement by the person that will cover the costs of the studies, indicating the annual amount assigned for this purpose and
   b. Submit a copy of the income tax return of the person, residing in the U.S. that will cover the cost of the studies or, if self financed, submit a letter from the applicant’s banking institution, certifying availability of funds to cover the studies,
6. Applicants may be required to take the Test of English as a Foreign Language (TOFEL).
NON-DEGREE SEEKING STUDENTS

Applicants completing requirements from another institution of higher education and having authorization to enroll in a course(s) at Polytechnic University of Puerto Rico - Orlando Campus are classified as non-degree seeking students. Also, applicants who are not interested in obtaining an academic degree or receiving a grade from Polytechnic University of Puerto Rico - Orlando Campus except for use as professional development are classified as non-degree seeking students. Non-degree seeking students are not eligible for financial aid.

• Submit a completed application form for admission including a non-refundable fifty-dollar ($50) application fee that is not applied to the registration charges.

• Submit an authorization as Non-Degree Seeking Student.

NON-DEGREE SEEKING STUDENTS TO REGULAR STUDENT STATUS

If a non-degree seeking student would like a classification change, all requirements from the Admission Office must be met and a grade of “C” or better must be earned in the enrolled course. A non-degree seeking student qualifies for financial aid only when the classification to a regular student is official.
III. UNIVERSITY OPERATIONS

ACADEMIC INFORMATION AND SERVICES

The student should be familiar with:

• academic requirements for the degree he/she plans to earn
• major program of study
• any changes published after the printing of this catalog

A degree will be awarded only to a student who has satisfied all of the academic and administrative requirements of Polytechnic University of Puerto Rico - Orlando Campus.

ACADEMIC SCHEDULE

Registration for all students is held prior to the beginning of each trimester on designated registration days as stipulated in the Academic Calendar. Completion of registration for each term is a prerequisite to class attendance. The academic year consists of three terms, and one optional summer session. Fall, Winter, and Spring classes are scheduled from 4:00 pm to 10:00 pm, Monday through Thursday, and from 9:00 am to 1:00 pm on Saturdays. Depending on the term, students may be required to make up class contact hours lost because of holidays. Summer class hours are subject to defer pending student needs.

ACADEMIC LOAD

The minimum full-time load per term is twelve (12) credit hours for undergraduate students. To register for sixteen (16) credit hours or more, the student must acquire the approval of the Academic Director. The minimum full-time load per term is six (6) credit hours for graduate students. To register for nine (9) credit hours or more, the student must acquire the approval of the Academic Director. Credit hours will not be awarded for courses in which the student is not properly registered.

MODES OF INSTRUCTION

Traditional in-residence, teleconference courses and online are offered on the campus during the evening during traditional academic terms throughout the year.

ADD/DROP PERIOD

Prior to the first class meeting of a course a student may, add or drop from courses by completing an Add/Drop Form at the Registrar’s Office.

Policy: Students may add a course during the official Add/Drop period; dropped courses will not appear in permanent record. Approval of the student’s instructor is necessary before any course change is made. For withdrawal after the Add/Drop period, refer to the Course Withdrawal Policy.

WITHDRAWAL

Polytechnic University of Puerto Rico - Orlando Campus does not encourage course withdrawal. It is recommended the students meet with their academic advisor to discuss possible options. In
the event that withdrawal is the only alternative or if for any reason a student needs to withdraw from the University, the following procedures must be performed.

Course Withdrawal:
- Complete a Withdrawal Form, available at the Office of the Registrar.
- Course withdrawal must be approved by the student’s instructor, academic advisor, Financial Aid Officer and Finance Officer.
- The completed and approved Withdrawal Form must be submitted to the Office of the Registrar. Students may only withdraw from courses as stipulated in the Academic Calendar.

University Withdrawal:
- Complete a Withdrawal Form, available at the Office of the Registrar.
- Withdrawal from the University must be approved by the student’s academic advisor, Financial Aid Officer, Registrar and Finance Officer.
- The completed and approved Withdrawal Form must be submitted to the Office of the Registrar.

COURSE CANCELLATION
The University reserves the right to cancel any scheduled class within the first week of a trimester due to insufficient enrollment or for which the designated instructor is unable to meet his or her teacher commitment. Tuition is fully refundable for any cancelled course.

GRADING SYSTEM
The alpha numeric grading system will appear in the midterm and final reports are as follows:

A. Excellent (4 honor points per credit hour)
B. Good (3 honor points per credit hour)
C. Satisfactory (2 honor points per credit hour)
D. Deficient (1 honor point per credit hour)
F. Failure (0 honor points per credit hour)
I. Incomplete (0 honor points per semester hour)

SYMBOLS
AU Auditor
R Repeated course
W (Withdrawal) Indicates that the student was permitted to withdraw from a course without penalty. It indicates the authorization of the officers named in the two previous sections.
P Passed, only for specified courses.
NP Not passed, only for specified courses.
S  Satisfactory
NS  Non Satisfactory
E  Expired course
I  Incomplete – Accompanied by a letter grade
RQ  Student is not complying with the pre-requisites.
NR  Never Reported (Registered student without attendance record)

GRADE INDEX
The grade index of a student is the measure of academic achievement. It is based on a 4-point system.
A student may be allowed to repeat a course passed with a “D”, before taking the next course in the sequence, if the corresponding Department Head considers that the case has sufficient merits to receive authorization. In computing the grade index, the highest grade obtained in a repeated course will be used whenever it is higher than the original grade. If the grade obtained in the repeated course is lower than the original grade, the original grade will prevail.

STUDENT ACADEMIC EVALUATION
The policy and procedures for student retention, probationary status, suspension, and permanent dismissal are established for the evaluation of a student’s academic achievement. Polytechnic University of Puerto Rico - Orlando Campus requires every student to demonstrate academic progress in the number of academic credit hours completed and the grade point average the student maintains.

DEFINITIONS
Credit Hour  Credit hour corresponds to fifteen (15) contact hours per credit per term for a lecture course and thirty (30) to forty-five (45) contact hours per term per credit for laboratory or practicum course.

Attempted Credit Hours  Credit hours the student has registered at Polytechnic University of Puerto Rico - Orlando Campus, and in which he/she has obtained I, A, B, C, D, F, or W, including all repetitions.

Transferred Credit Hours  Credit hours taken on other college campuses, recognized by accrediting agencies, which the student has passed with grades of A, B or C, and that are accepted by the Department Director or the corresponding Dean’s approval, in accordance with Polytechnic University of Puerto Rico - Orlando Campus’s policy. Any credit hours taken to comply with the preparatory courses required in a program cannot be used as a general elective transferred class.

Passed Credit Hours  Attempted credit-hours taken at Polytechnic University of Puerto Rico - Orlando Campus in which A, B, C or D grades are obtained, except in those specific cases defined by the departments.

Grade Point Average (GPA)  The measure of academic merit achieved by the student. It is calculated by dividing the total accumulated honor points by the number of credit hours in which the student has received final grades, including outstanding F’s.
**Dismissal for Academic Deficiency** A student who systematically fails to satisfy the achievement index may be permanently dismissed from Polytechnic University of Puerto Rico - Orlando Campus for academic deficiency.

**Academic Progress** The measure that shows whether the student passes 66% of the attempted credit hour with a grade point average equal to, or higher than, the retention index. See Table A or Table B, whichever applies.

**Repeated Courses** Undergraduate courses enrolled two or more times because the student has obtained a grade of D, F or W. For the purpose of determining the Grade Point Average only the highest grade will be used.

**Year** Academic year consisting of three consecutive academic periods named trimesters from August to May of the following year. The Summer academic period is optional.

**Doted Courses** All courses will be extinct, expired or doted eight (8) years after being passed. This rule applies equally to courses passed at Polytechnic University of Puerto Rico - Orlando Campus or to transfer courses. The respective Director may validate some courses after evaluating each course. The student must repeat all those confirmed doted by the Director, or in its place may be authorized by the Dean instead to take advanced equivalent courses.

**Academic Term** One of the three consecutive academic periods named trimesters consisting of twelve (12) weeks each or the Summer consisting of six (6) weeks session which jointly constitute an academic year.

**Retention Index (Qualitative Element)** Polytechnic University of Puerto Rico - Orlando Campus adopts the required retention index, as seen in Table A, in accordance with the number of completed credit hours and transferred credit hours. (Students are required to obtain an average of 2.00 in concentration courses for graduation purposes.) This constitutes the Institutional Policy, administered by the Registrar’s Office.

**Table A**

<table>
<thead>
<tr>
<th>Transferred Credit Hours (1)</th>
<th>Passed Credit Hours at Polytechnic (2)</th>
<th>Total Accumulated Hours Range Credit Hours (1 + 2)</th>
<th>Minimum Grade Point Average (GPA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-30</td>
<td></td>
<td>1.50</td>
<td></td>
</tr>
<tr>
<td>31-60</td>
<td></td>
<td>1.65</td>
<td></td>
</tr>
<tr>
<td>61-90</td>
<td></td>
<td>1.80</td>
<td></td>
</tr>
<tr>
<td>91 or more</td>
<td></td>
<td>2.00</td>
<td></td>
</tr>
</tbody>
</table>

Transferred credit hours will not be used to compute the grade point average, but they will be counted to determine the level or year to which the student belongs.

**Maximum Time Allowed to Complete an Academic Degree**, Students must complete graduation requirements within a maximum time equivalent to 150% of the credit hours required by the academic degree program enrolled.
Probationary and Suspension Status Students whose academic progress does not satisfy the qualitative elements will begin a probationary period that will not exceed two consecutive academic terms before being suspended for one term. After suspension is effective, the student may return under a probationary status for a maximum period of one (1) additional academic term, at the end of which may be suspended for a period of three academic terms. The student may be admitted once again under a probationary status for one academic term. In the event he/she does not succeed, he/she will be permanently dismissed.

Incomplete If the professor grants an Incomplete (I) grade in a course, it must be accompanied by a letter grade. The student must complete course requirement within thirty (30) days. Otherwise, the incomplete grade will be changed to the grade which accompanied the incomplete.

Dual Courses Graduate courses which content can be validated to substitute an undergraduate course. These courses will be used in the graduate admission process as transferred and will be counted as part of the Master Degree. The maximum courses allow to be used per undergraduate program is 4 courses. The validation of these courses in the Master Degree will reduce the total credits from 39 to 27. To apply for these courses the student should have a GPA of 3.00 or higher. The validation form should be approved by the Academic Director prior attending to the course.

ACADEMIC PROGRESS REVIEW PROCEDURES

The academic progress of the students will be measured using the qualitative element which will be verified each academic year, during the summer.

The retention index (qualitative part) will be determined according to Table A. The GPA will be computed only with credits taken at Polytechnic University of Puerto Rico - Orlando Campus. Probation, suspension or dismissal will be determined, employing the following procedure:

1. When the accumulated index is lower than the established index as given in Table A, an academic probation period (P₁) will be granted for one academic term. The Registrar’s Office will notify the student of their academic status via a certified letter. At the same time, the Counseling Office will be notified to ensure the required follow-up.

2. During the probation period (P₁), the student must raise the academic index to a value equal or higher than the corresponding one established in Table A.

3. If after this probation period the student does not comply with the established condition in Item 2, and does not remediate his/her academic deficiencies, he/she will be granted a second one academic term probation (P₂). If the student fails to succeed the probation (P₂), the student will be suspended for one academic year. The Registrar’s Office will notify the suspended student via a certified letter.

After the one year suspension, the student may be readmitted in probation (P₃) for one academic year.

In the event the student fails to reach a satisfactory retention index after the third probationary period (P₃), the student will be suspended for a period of three (3) academic years. Afterwards, the student may request readmission. The student may be admitted again under a probationary...
status for one academic year. In the event he/she does not succeed, he/she will be permanently dismissed.

**RIGHT TO APPEAL**

1. The student may appeal this decision under the following conditions:
   a. Any student who considers that a mistake has been made in the application of these policies and procedures used to evaluate academic progress may send a written request for reconsideration to the Academic Achievement Committee within ten (10) working days after written notification of the decision.
   
   b. The request for reconsideration should include the decision referred to, give a brief statement of facts, state and justify the basis for the requested change or restitution.
   
   c. Each request for reconsideration must be submitted to the Registrar’s Office.
   
   d. Presentations before the Academic Achievement Committee by persons who are not members of the Committee will be permitted in special cases. The Committee’s decision will be final.

**HONOR ROLL**
Undergraduate students with a cumulative grade point average of at least 3.25 and who have been full-time students for the past year and have passed all the credits attempted will appear on the Honor Roll.

**DEAN’S LIST**
An announcement is at the beginning of each term of those students who, in the previous term, completed a minimum of twelve (12) credit hours and accumulated a general grade point average of 3.25 or higher, and who are eligible for inclusion on the Dean’s List.

**READMISSION POLICY AND PROCEDURE**
Students who are not active during two (2) or more consecutive terms, or who are under suspension for disciplinary or academic reasons, and who wish to continue their studies, must apply for readmission to the Institution.

Regular students who have discontinued their studies for one year or more will be readmitted under the procedure in effect. The applicable curriculum will be the one outlined in the Catalog in effect at the time of readmission. Each applicant will be evaluated by the Department Director to which the student is seeking readmission.

Readmission applications must be submitted at least one (1) month prior to the next registration period. If the student does not register during the period requested, the application will remain active for one (1) additional term.

Steps for readmission:

1. The student will complete and submit the Readmission Application Form to the Registrar’s Office who will notify the Readmission Committee.

2. A nonrefundable readmission fee.
3. Upon payment of the readmission fee, the Finance Office will notify the student of any outstanding debt with the institution.

4. If the student is indebted to the Institution, the process of readmission will be delayed until the student pays the debt and receives clearance from the Finance Office.

5. The Registrar’s Office will apply the following criteria to evaluate the readmission application:
   a. Study any evidence of disciplinary measures taken or noncompliance with University regulations and any stipulations made.
   b. Verify that the student complies with the minimum GPA according to Table A (Retention Index).
   c. Confirm the student complies with the required suspension time limit.

6. A student whose readmission application has been denied may appeal to the Readmission Committee through the Registrar’s Office. The student will receive instructions regarding the procedure to follow in order to request reconsideration by the Committee.

7. If the student has a lower grade point than required or if the required suspension time limit has not expired, and the Committee rules in favor of the student, readmission will be granted on a probationary basis. The conditions of the probation period will be:
   a. The student must pass all courses for which he/she is registered with a grade of “C” or higher.
   b. The academic load will be limited to twelve (12) credit hours maximum per term for undergraduate students and six (6) credit hours maximum for graduate students.
   c. The GPA should be increased or improved according to what has been established.

8. Students who have interrupted their studies at Polytechnic University of Puerto Rico - Orlando Campus at their will, and during this inactive period have attended another institution (or other institutions) without prior permission from the Department Director, will have no right to request the transfer of credit hours taken at other institutions.

9. The decision of the Readmission Committee will be sent in writing to the student through the Registrar’s Office.

NORMS AND PROCEDURES FOR THE EVALUATION OF STUDENT ACADEMIC PROGRESS AT THE GRADUATE LEVEL

Purpose

This document includes the norms and procedures of student academic progress at the graduate level. The purpose of these norms and procedures is to define the parameters to be used in the retention, probation, suspension, and academic dismissal of students. They establish the mechanisms to be followed in the evaluation of student academic progress. These norms and procedures apply to every student admitted or readmitted to pursue graduate studies.

Norms and Procedures

The PUPR- Orlando Campus requires that all graduate students demonstrate academic progress through the number of approved credit-hours and general average.
A. Definitions
1. Attempted credit-hours - all credit-hours in which the student enrolls at the graduate level at the Polytechnic University of Puerto Rico, Orlando Campus, for which a grade of I, A, B, C, D, F, W, S, NS, NP, or P is given, including all the number of times the student has enrolled in the same course.
2. Transfer credit-hours - graduate credit-hours approved with a grade of “A”, “B” or its equivalent at an accredited institution of higher learning, and are accepted by the Graduate School in accordance with the prevailing norms at the PUPR-Orlando Campus. Transfer credit-hours will not be taken into consideration in qualitative evaluation. These credit-hours will be considered to determine the level or year of study of the student at the graduate level. A maximum of six (6) credits will be accepted in transfer from other accredited institutions of higher learning after official admission.
3. Approved credit-hours – credit-hours attempted at the PUPR – Orlando Campus by students admitted to the Graduate School and approved with a grade of “A”, “B”, “C”, “S” or “P”.
4. General average - measure used to evaluate the academic performance of the graduate student. This measure is computed by dividing the total number of credit-hours accumulated by the total number of credit-hours in which the student has received final grades, including “F,s” that have not been removed. Courses in which grades of “S”, “NS”, “P” or “NP” will not be included for computing the measure.
5. Repetition of courses - practice under which the graduate student is allowed to repeat only a course in which he (she) obtained a grade of “C”, “D”, “F”, “NS”, or “NP”. In accordance with this practice, only the highest grade will be considered to determine the general average.
6. Probation - temporary condition of the graduate student at the PUPR- Orlando Campus because of academic reasons, in which both the quantitative and qualitative elements are taken into consideration.
7. Suspension because of academic deficiency - dismissal of the graduate student at PUPR- Orlando Campus for academic reasons, in which the qualitative elements, as well as the time on probation, are considered.
8. Academic year - three academic educational periods that makeup the academic year which begins with the autumn term.
9. Educational period - typical academic period during which the regular courses are offered, several periods of which three make up the academic year.
10. Probation to receive Financial Aid – student will be in probation status for one academic year because he/she did not fulfill deficiency shown in Table A and/or B from section 3.
11. Suspension of Financial Aid – student that at the end of his/her probation period does not surpass the deficiency shown in table A and/or B from section 3.

B. Norms of Academic Progress to be followed by the Registrar’s Office for the evaluation of students
1. Academic index

Students are required a 3.00 or more general index for graduation and that they are not on probation or have-not dismissed.
2. Total number of credit-hours approved

---

1 Apply only to students who have scholarship or loan.
The student should pass 50% of all credit-hours attempted at the Institution.

3. Probation and suspension

All graduate students, whose academic progress does not comply with the retention indexes shown in Table A or with the conditions included in Table B, will begin an “On Probation” period for no more than a year. If the “On Probation” period is not overcome, the student will be suspended (dismissed) from the Institution.

### Table A
Retention Index

<table>
<thead>
<tr>
<th>Transfer Credit-hours (1)</th>
<th>Credit-hours Approved at PUPR (2)</th>
<th>Total Credit-hours Accumulated at PUPR</th>
<th>Minimum General Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0-9</td>
<td>2.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10-18</td>
<td>2.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19 or more</td>
<td>3.00</td>
</tr>
</tbody>
</table>

### Table B
Reasons for a Probation Status

<table>
<thead>
<tr>
<th>Reasons for Probation Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade of “C” in more than two courses</td>
</tr>
<tr>
<td>Grade of “D” in one course</td>
</tr>
<tr>
<td>Grade of “F” in one course</td>
</tr>
<tr>
<td>Grade of “NS” in thesis or project during a term</td>
</tr>
<tr>
<td>Failure once in the comprehensive exam or in the defense of the thesis or design project</td>
</tr>
</tbody>
</table>

4. Incompletes

If the course instructor has given an “Incomplete” in a course, the graduate student must complete the course requirements within the date stated in the next educational period. If the student does not comply with what is hereby stated-last day to remove grades of “Incomplete” the provisional grade given will be turned into the final grade in the course(s). Grades of “Incomplete” will be included to determine the general average using the provisional grade.

C. Procedures for evaluating graduate level students

The academic progress of all graduate level students will be measured in the following way:

1. The general average will be verified every trimester.
2. Probation will be granted for educational period.
3. If at the end of the year on probation, the student does not meet all the conditions established and does not overcome the academic deficiencies; he (she) will be permanently suspended from the Institution.
D. Appeals

The student may appeal a decision under the following conditions:

1. Every student is entitled to apply, in writing, to the Academic Achievement Committee a reconsideration of the above mentioned decision within the ten work days following the date in which the decision was notified.
2. The application for reconsideration should show the decision referred to, include a brief statement of facts, expose and justify the basics or foundation that support the appeal and indicate the change or remedy asked for.
3. All reconsideration applications should be filed in the Graduate School Deanship.
4. Exposition of the case by the student before the Academic Achievement Committee is acceptable, and if he (she) so wishes, can be accompanied by persons who are not members of the Committee.
5. The Academic Achievement Committee will inform the student in writing, of the decision taken in regard to the particular case appealed. If the case appealed is approved by the Committee, the student will be re-joined to his/her program on a suspension status and will be responsible of the total registration cost.

Effective Date

These rules and regulations are in effect since the beginning of the 2010-2011 academic year. Any student affected by norms and procedures eliminated by these new rules and regulations may apply for reconsideration of his (her) case.

GRADUATION APPLICATION

Candidates for a bachelor’s or master’s degree, who have completed at least 80% of the required credit hours, must apply for graduation. Applications may be obtained at the Registrar’s Office. The application must be completed and a graduation fee paid no later than the date specified in the Academic Calendar. The application should be completed and returned to the Registrar’s Office after obtaining the clearance of the Library, Financial Aid Office, and the Finance Office indicating payment of a nonrefundable graduation fee. Any alleged errors in the analysis of an academic record should be reported to the Registrar within a week after it has been received.

GRADUATION REQUIREMENTS

Polytechnic University of Puerto Rico - Orlando Campus reserves the right to make changes in the curricula and degree requirements whenever, in its judgment, the same are considered beneficial for the Institution. As a rule, a student is entitled to graduate under the curriculum requirements in effect at the time of admission to the University. However, students who fail to fulfill the graduation requirements within the regular period of time assigned to their corresponding curricula, and students who re-enroll after a period of one year of absence or more, are governed by the requirements applicable to the class in which they will graduate.

To receive a graduation diploma from Polytechnic University of Puerto Rico - Orlando Campus, candidates must meet the following conditions:
1. Apply for graduation after the successful completion of 80% of the required credit hours by filing an application form at the Registrar’s Office.

2. Pay the graduation fee and satisfy all other financial obligations to the University no later than the date specified in the Academic Calendar.

3. Students must have been recommended for the degree by their corresponding Dean and Faculty to the President of Polytechnic and to the Board of Trustees.

4. Students completing requirements in the Summer, Fall, Winter and Spring terms are invited to attend the Commencement Exercises the following Summer.

5. Students should have taken the final credit hours for the degree at Polytechnic University with the understanding that these credit hours correspond to at least the total credit hours of the last year of the program as specified and described in the Catalog.

6. The student must attain a minimum cumulative grade point average of 2.00 in the student’s major as well as a minimum cumulative grade point average of 2.00. It is highly recommended that students repeat, if possible, all concentration courses passed with “D” in order to improve their GPA.

7. The student must satisfy all credit hours specified for the degree within a period equivalent to six (6) years. After the expiration of said period, all doted or expired courses must be replaced with third and fourth year courses, unless otherwise authorized by the corresponding Department Head and Dean of Faculty.

8. For graduation with honors, the undergraduate student must satisfy all of the following additional criteria:
   a) completed at least 65% of the credit hours required for graduation at Polytechnic University of Puerto Rico - Orlando Campus
   b) earned, at Polytechnic University of Puerto Rico - Orlando Campus an overall (including all attempted credit hours) a grade point average of: $3.250-3.499$ for Cum Laude; $3.500-3.899$ for Magna Cum Laude; or $3.900-4.000$ for Summa Cum Laude

CURRICULAR CHANGES
Students enter the university under the guidelines of the annual catalog based on the student’s date of acceptance. All requirements within that year’s catalog pertaining to the student’s chosen major must be met for graduation

If curriculum changes, students are not obligated, but may elect, the new course in lieu of the prescribed course in the entrance catalog. The Department Director will facilitate any necessary transitions if curriculum or requirements change.

TRANSFER OF CREDITS – OUT
Most colleges and universities accept transfer credits from regionally accredited universities, subject to limitations on elapsed time and the number of credits. Although the University is regionally accredited, it remains the responsibility of the student to confirm the transferability of Polytechnic University of Puerto Rico - Orlando Campus credits to another college or university program.

CERTIFICATIONS AND TRANSCRIPTS
Transcripts or any other official statement will be issued by the Registrar usually within two weeks after the student submits a written request and pays the corresponding fee. However, when a request is made at the beginning or the end of a term, a longer period of time for issuance may be required.
To transfer credit hours to other colleges and universities and to supply information to certifying agencies and prospective employers, official transcripts are issued in a confidential manner. These are mailed directly to the addresses designated by the students and are never given to the student or any other individual.

Students may also obtain an official copy of the transcript of credits marked student copy. Any alleged errors in the transcript should be reported to the Registrar within ten (10) days of receiving it.

A transcript and certification fee is charged for each transcript. All services are denied to debtor students.

**DIPLOMAS**
The Registrar’s Office will contact graduates once the Diplomas are ready to be claimed.

**CHANGE OF ADDRESS**
When students submit their applications for admission, they are required to write down their mailing address. After admission, changes of address should be reported immediately to the Registrar’s Office. If the student’s address is not updated by the student, the University will not be responsible for correspondence it sends which is not received by the student. Any notice, official or otherwise, mailed to a student’s addresses as it appears on the records shall be deemed sufficient notice.

**CLASS ATTENDANCE**
Students should maintain regular attendance if they are to attain maximum success in the pursuit of their studies. Students who have not attended any classes during the first two weeks of the academic term are automatically disqualified to charge such tuition to federal funds. The instructor, after receiving the class roster, will submit, in writing, the names of all such students to the Office of the Registrar.

It is recognized that the record of class attendance may vary according to the student, the instructor or the course. On occasions, it may be necessary for the student to be absent from scheduled classes or laboratories for health reasons. The student is responsible for contacting the instructor for all work, completed or assigned. Instructors in charge of courses in all programs of study are required to include in their midterm and final grade reports the total number of absences of all students. The Registrar will not accept reports if this condition is not met by the instructor.

**MILITARY TRAINING**
Polytechnic University of Puerto Rico - Orlando Campus students may request consideration of credit award for documented military training. The Academic Director has the responsibility of working with the student to evaluate the request and to determine if the credit option is appropriate. A maximum of 30 credit hours of military training will be accepted into the university.
STANDARDIZED EXAMINATIONS
The University will accept a maximum of 30 credit hours of standardized testing credit. All such credit will be listed on the student’s transcript and will not be removed once it has been recorded. Students may receive credit after successfully completing any of the following standard examinations: College Level Examination Program (CLEP) and/or Defense Activity for Non-Traditional Educational Support (DANTES).

EXPERIENTIAL LEARNING CREDIT (BSOM PROGRAM ONLY)
Polytechnic University of Puerto Rico - Orlando Campus recognizes that many students acquire college level education outside the university classroom. The University will accept a maximum of 30 credit hours of documented on-the-job/prior training experience that has not previously resulted in academic credit. Prior work experience will be evaluated on a case-by-case basis by the university upon the student’s acceptance into the program of study. A prior learning fee is charged for credits that are granted.
IV. ARTICULATIONS

AGREEMENT BETWEEN VALENCIA COMMUNITY COLLEGE AND POLYTECHNIC UNIVERSITY OF PUERTO RICO-ORLANDO CAMPUS

Articulated Pre-Major: ENGINEERING (Polytechnic University of Puerto Rico - Orlando Campus) (Course Titles and Codes based on Valencia Community College Catalog)

This pre-major is designed for the student who plans to transfer to the Polytechnic University of Puerto Rico - Orlando Campus (Polytechnic University of Puerto Rico - Orlando Campus) as a junior to complete a four-year bachelor’s degree in the School of Engineering. It is based upon an articulation agreement in Engineering with University of Puerto Rico - Orlando Campus. Students who plan to transfer are responsible for completing the admission requirements of Polytechnic University of Puerto Rico - Orlando Campus. Students in Pre-Majors must complete all required college-preparatory courses, prerequisites for the listed course requirements, and Valencia’s foreign language proficiency requirement. Courses meeting the preceding requirements will be in addition to the 60 credit hours listed. Extra Engineering Electives courses and the course listed in the NOTE below may also be taken at Valencia in addition to the 60 credit hours listed. The courses do not have to be taken in the order listed; the sequence suggested is based upon prerequisites and level of course difficulty for most students.

FOUNDATION COURSES
+  * ENC 1101 Freshman Composition I (GR) 3
   Humanities (See AA General Education Requirement) 3
+  EGS 1006 Introduction to the Engineering Profession 1
+  EGS 1007 Engineering Concepts and Methods 1
+  * MAC 2311 Calculus with Analytic Geometry I (GR) 5
   SPC 1600 Fundamentals of Speech 3
   POS 2041 U.S. Government I 3
**Total Hours** 19

INTERMEDIATE COURSES
+  * ENC 1102 Freshman Composition II (Gordon Rule Writing) 3
+  * MAC 2312 Calculus with Analytic Geometry II (Gordon Rule) 5
+  * Humanities HUM Prefix (GR) 3
+  * PHY 2048C General Physics with Calculus I 4
   ECO 2013 Principles of Economics - Macro 3
+  * EGS 2310 Engineering Analysis – Statics 3
**Total Hours** 21

ADVANCED COURSES
+  * MAC 2313 Calculus with Analytic Geometry III (GR) 4
+  * PHY 2049C General Physics with Calculus II 4
+  * MAP 2302 Differential Equations (GR) 3
+  * Humanities (GR) 3
+  * EGS 2025 Probability and Statistics for Engineers 3
+  Engineering Electives (PUA) 3
**Total Hours** 20
Total Hours Required 60

Engineering Electives (Polytechnic University of Puerto Rico - Orlando Campus)

Students will select a minimum 3 credit hours; Extra Engineering Electives courses as well as the course in the NOTE may be taken at Valencia, in addition to the 60 credit hours listed.

+*  EGN 1111C  Engineering Graphics (All majors)  3
+*  EGS 2004  Electrical Networks (Electrical majors)  3
+*  EGS 2321  Engineering Analysis – Dynamics (All majors)  3
+*  EGS 2373  Principles of Electrical Engineering (Civil majors)  3
+*  SUR 1101C  Basic Surveying and Measurements (Civil majors)  4

NOTE: It is recommended that students also complete *CHM 1045C General Chemistry with Qualitative Analysis I.
+  These courses must be completed with a minimum grade of C.
*  These courses have a course prerequisite(s). See course descriptions in Valencia Community College catalog. Specialized courses may not be offered every session.

ARTICULATION AGREEMENT BETWEEN SEMINOLE COMMUNITY COLLEGE AND POLYTECHNIC UNIVERSITY OF PUERTO RICO - ORLANDO CAMPUS

Articulated Pre-Major: Pre-majors of Accounting, General Business and Economics and Engineering (Polytechnic University of Puerto Rico - Orlando Campus)

PUPR Pre-requisites for the Bachelor of Business Administration
(Course Titles and Codes based on Seminole Community College Catalog)

This pre-major is designed for the student who plans to transfer to the Polytechnic University of Puerto Rico, Orlando Campus as a junior to complete a bachelor’s degree in the School of Business. Students who plan to transfer are responsible for completing the admission requirements of the Polytechnic University of Puerto Rico, Orlando Campus.

The course listed below do not have to be taken in the order listed; the sequence suggested is based upon prerequisites and level of course difficulty for most students. These courses will meet graduation requirements for the Associate of Arts from Seminole Community College and pre-requisites for one of the Business programs at the Polytechnic University of Puerto Rico, including: Accounting, General Business and Economics.

FOUNDATION COURSES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC 1101</td>
<td>English I</td>
<td>3</td>
</tr>
<tr>
<td>Humanities</td>
<td>Humanities General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>SPC 1600</td>
<td>Fundamentals of Speech</td>
<td>3</td>
</tr>
<tr>
<td>PSY 2012</td>
<td>Social General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>PHY 1020</td>
<td>Physical Science</td>
<td>3</td>
</tr>
</tbody>
</table>
CGS 2100C  Office Applications  3

**INTERMEDIATE COURSES**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC 1102</td>
<td>English II</td>
<td>3</td>
</tr>
<tr>
<td>Humanities</td>
<td>Humanities General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>SYG 2000</td>
<td>Social General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>History</td>
<td>History General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>MAC 1105</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>ACG 2021</td>
<td>Principles of Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>Science</td>
<td>Area A or B General Education Science Course</td>
<td>3</td>
</tr>
</tbody>
</table>

**ADVANCED COURSES**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STA 2023</td>
<td>Statistics</td>
<td>3</td>
</tr>
<tr>
<td>ACG 2071</td>
<td>Principles of Managerial Accounting</td>
<td>3</td>
</tr>
</tbody>
</table>

Five of the following six courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAN 2021</td>
<td>Introduction to Management</td>
<td>3</td>
</tr>
<tr>
<td>MAR 2011</td>
<td>Marketing</td>
<td>3</td>
</tr>
<tr>
<td>BUL 2241</td>
<td>Business Law I</td>
<td>3</td>
</tr>
<tr>
<td>FIN 2001</td>
<td>Business Finance</td>
<td>3</td>
</tr>
<tr>
<td>ECO 2013</td>
<td>Principles of Economics (MACRO)</td>
<td>3</td>
</tr>
<tr>
<td>ECO 2023</td>
<td>Principles of Economics (MICRO)</td>
<td>3</td>
</tr>
</tbody>
</table>

**TOTAL** 60

PUPR Pre-requisites for the Bachelor of Science in Civil Engineering, Electrical Engineering or Computer Engineering

This pre-major is designed for the student who plans to transfer to the Polytechnic University of Puerto Rico, Orlando Campus as a junior to complete a bachelor’s degree in the School of Engineering. Students who plan to transfer are responsible for completing the admission requirements of the Polytechnic University of Puerto Rico, Orlando Campus.

The courses listed below do not have to be taken in the order listed; the sequence suggested is based upon prerequisites and level of course difficulty for most students. These courses will meet graduation requirements for the Associate of Arts from Seminole Community College and pre-requisites for Engineering at the Polytechnic University of Puerto Rico.

**FOUNDATION COURSES**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC 1101</td>
<td>English I</td>
<td>3</td>
</tr>
<tr>
<td>Humanities</td>
<td>Humanities General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>MAC 2311</td>
<td>Analytic Geometry and Calculus I</td>
<td>5</td>
</tr>
<tr>
<td>SPC 1600</td>
<td>Fundamentals of Speech</td>
<td>3</td>
</tr>
<tr>
<td>Social</td>
<td>Social General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>Science</td>
<td>Area A or B General Education Science Course</td>
<td>3</td>
</tr>
</tbody>
</table>
### INTERMEDIATE COURSES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC 1102</td>
<td>English II</td>
<td>3</td>
</tr>
<tr>
<td>MAC 2312</td>
<td>Analytic Geometry and Calculus II</td>
<td>5</td>
</tr>
<tr>
<td>PHY 2048C</td>
<td>Physics with Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>CHM 2045C</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>Humanities</td>
<td>Humanities General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>Social</td>
<td>Social General Education Course</td>
<td>3</td>
</tr>
<tr>
<td>History</td>
<td>History General Education Course</td>
<td>3</td>
</tr>
</tbody>
</table>

### ADVANCED COURSES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC 2313</td>
<td>Analytic Geometry and Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>PHY 2049C</td>
<td>Physics with Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MAP 2302</td>
<td>Elementary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>XXX XXXX</td>
<td>Elective</td>
<td>4</td>
</tr>
</tbody>
</table>

TOTAL 60
## V. FINANCIAL INFORMATION AND SERVICES

### TUITION AND FEES SCHEDULE

Students can obtain the current Tuition and Fees Schedule by visiting or contacting the Admission or the Finance Officer.

**Tuition**

**Undergraduate Tuition:**

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Rate per Credit Hour</th>
<th>Institutional Scholarship</th>
<th>Total Cost 2011-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Courses</td>
<td>$345.00</td>
<td>$30.00</td>
<td>$315.00</td>
</tr>
<tr>
<td>Business &amp; General Courses</td>
<td>$315.00</td>
<td>$40.00</td>
<td>$275.00</td>
</tr>
</tbody>
</table>

**Graduate Tuition:**

<table>
<thead>
<tr>
<th>Rate per Credit Hour</th>
<th>Total Cost 2011-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>$395.00</td>
<td></td>
</tr>
</tbody>
</table>

**Fees**

<table>
<thead>
<tr>
<th>Fee Description</th>
<th>Rate per Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Application Fee (non-refundable)</td>
<td>$30.00</td>
</tr>
<tr>
<td>Graduate Application Fee (non-refundable)</td>
<td>$50.00</td>
</tr>
<tr>
<td>Application Fee International Students (non-refundable)</td>
<td>$150.00</td>
</tr>
<tr>
<td>Lab Fee</td>
<td>$115.00</td>
</tr>
<tr>
<td>Technology Fee</td>
<td>$40.00 Per Trimester</td>
</tr>
<tr>
<td>Library Fee</td>
<td>$40.00 Per Trimester</td>
</tr>
<tr>
<td>Student Identification Card</td>
<td>$15.00 Per Occurrence</td>
</tr>
<tr>
<td>Registration Fee</td>
<td>$10.00</td>
</tr>
<tr>
<td>Late Registration Fee</td>
<td>$40.00</td>
</tr>
<tr>
<td>Return Check Fee</td>
<td>$50.00</td>
</tr>
<tr>
<td>Transcript/Certification Fee</td>
<td>$5.00</td>
</tr>
<tr>
<td>Student Activity Fee</td>
<td>$10.00</td>
</tr>
<tr>
<td>Add/Drop Course Fee</td>
<td>$15.00 Per Course</td>
</tr>
<tr>
<td>Deferred Payment Fee</td>
<td>$60.00</td>
</tr>
<tr>
<td>Undergraduate Readmission Fee (non-refundable)</td>
<td>$30.00</td>
</tr>
<tr>
<td>Graduate Readmission Fee (non-refundable)</td>
<td>$50.00</td>
</tr>
<tr>
<td>Partial Withdrawal Fee (each)</td>
<td>$10.00</td>
</tr>
<tr>
<td>Total Withdrawal Fee (total)</td>
<td>$20.00</td>
</tr>
<tr>
<td>Graduation Fee</td>
<td>$165.00</td>
</tr>
<tr>
<td>Academic Evaluation Fee (1st one is Free)</td>
<td>$15.00</td>
</tr>
<tr>
<td>Change for Academic Concentration or Programs</td>
<td>$25.00</td>
</tr>
<tr>
<td>Copy of Registration Report</td>
<td>$5.00</td>
</tr>
<tr>
<td>Duplicate Diploma</td>
<td>$75.00</td>
</tr>
<tr>
<td>ID Card or Duplicate</td>
<td>$15.00</td>
</tr>
<tr>
<td>Athletic Fee</td>
<td>$15.00</td>
</tr>
</tbody>
</table>
Tuition & Fees are subject to change.

**PAYMENT PROCEDURES**
Tuition and fees are payable in full during the registration period, or prior to the first day of classes. Students may opt to defer payment for thirty (30) days at a cost of the deferred payment fee, after paying at least 50% of total cost (including other financial aid). The “deferred payment” will allow the student a grace period after the first day of classes to pay the remaining balance without paying “late charges.” The registration process is not complete until all fees have been paid or proper arrangement for deferred payment has been made. Late charges on pending balances are 1.5% per month.

**COLLECTION POLICY**

a) Tuition and fees due from previous terms of study must be paid in full prior to the student registering for any additional courses.

b) Any balance remaining after 30 days will be subject to a 1.5% monthly charge.

c) Balances remaining unpaid after 180 days will be subject to a collection fee of $20 plus the 1.5% monthly charge.

Students who requested financial aid or veteran benefits must consult the Financial Aid Coordinator before their registration may be completed.

Payments of fees can be made either in cash, money order, a certified check, Visa, Master Card, American Express or Discover Card. Failure to pay any University fees when due may result in administrative withdrawal and/or in with holding copies of student’s academic records or other documents. Students with pending balances on their accounts are not permitted to enroll in subsequent trimesters.

**REFUND POLICIES**
The Finance Office is responsible for complying with the refund policies established by the Institution. These policies take into consideration institutional and current federal regulations. The procedure to apply for a refund must be submitted in writing, and in accordance with the academic calendar. The policies will be applied as follows:

**Total withdrawal for student registered for the 12 weeks term (two sessions)**

<table>
<thead>
<tr>
<th>Period</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>On or before the first day of the term</td>
<td>100%</td>
</tr>
<tr>
<td>First week</td>
<td>100%</td>
</tr>
<tr>
<td>Second week</td>
<td>33.33% of tuition</td>
</tr>
<tr>
<td>Third week and after</td>
<td>0%</td>
</tr>
</tbody>
</table>

Registration, Library, Educational Technology Center and activities fees are nonrefundable.

**FINANCIAL DELINQUENCY**
Students failing to pay their debts to the university on or before the day payment is due may be excluded from graduation. The University may also withhold grades, the issuance of transcripts, degrees, diplomas, and the granting of certificates of good standing to any student whose account is in arrears.
Inactive students with debts will have the opportunity of paying the pending balances. If the student fails to comply with payment, they are referred to a collection agency. Students referred to an agency for collection will be charged an additional $50.00 fee.

FINANCIAL AID

The Financial Aid Office provides information to students and their families regarding the available financial aid programs as well as the application process and eligibility requirements. Our mission is to provide accurate and clear consumer information to help students explore the different financial aid resources that can help them obtain the necessary funding to reach their academic goals.

Polytechnic University of Puerto Rico participates in the following financial aid programs from federal, state, institutional and private sources:

- Federal Pell Grant
- Federal Supplemental Educational Opportunity Grant (FSEOG)
- Florida Student Assistance Grant Program (FSAG)
- Access to Better Learning and Education Grant
- Florida Bright Futures Scholarship
- José Martí Scholarship Challenge Grant
- Scholarship For Children and Spouses of Deceased or Disable Veterans
- Federal Work-Study Program (FWSP)
- Florida Work Experience Program
- Federal Direct Loan Program for Students
- Federal Direct Loan Program for Parents of Undergraduate Students
- Federal Direct Loan Program for Graduate Students
- Private Student Loans
- Institutional Scholarships
- Private Scholarships

The availability of the above programs will depend on the total funds allotted to the Institution for the 2011-2012 academic year.

General Eligibility Requirements

To be eligible to receive financial aid from most federal and state programs, the student must:

- Be enrolled as a regular student
- Be working towards a degree in an eligible program
- Be a U.S. citizen or eligible non-citizen with valid Social Security Number
- Have a high school diploma or its equivalent
- Meet the Standards of Satisfactory Academic Progress
- Demonstrate financial need (except for some loans)
- Register with the Selective Service, if male between the ages of 18 and 25
- Certify that will use federal student aid only for educational purposes. The student must also certify that is not in default on a federal student loan and do not owe money on a federal student grant.
- Have no history of certain drug convictions
In addition to the above basic eligibility requirements, the student could be required to meet additional requirements such as minimum enrollment credits, minimum GPA, among others depending on the financial aid program. For the eligibility requirements of a specific program, contact the Financial Aid Office.

Application Process

To determine student’s eligibility for federal aid, the student must complete the Free Application for Federal Student Aid (FAFSA). Some financial aid programs, such as state grants, student loans and federal work-study, require an additional application.

The student must reapply for financial aid every year. Since some federal and state funds are limited, students are encouraged to apply as soon as possible after January 1st. New students should apply for financial aid at least two months before the first day of classes of the period for which they will enroll. Regular students must submit their 2011-2012 application before April 22, 2011.

Follow these steps to complete your 2011-2012 FAFSA:

1. Obtain a PIN for yourself at [www.pin.ed.gov](http://www.pin.ed.gov). If you are a dependent student, your parents will need a PIN to sign the FAFSA. If you got a PIN for the last year, you can use it to renew your FAFSA.

2. Collect the following information:
   - Your social security number and your parents’ social security numbers, and dates of birth, if you are a dependent student.
   - Your driver’s license number (if applicable).
   - If you are not a U.S. citizen, your alien registration number.
   - 2010 Income tax returns, W-2 forms and other records of income earned for yourself and your parents/spouse.
   - Evidence of untaxed income during 2010 such as Child Support, veteran’s none educational benefits, among other.
   - Information about savings, investments as well as business and farms assets for yourself and your spouse/parents, if applicable.
   - PUPR’s School code: **014255**

3. Complete the FAFSA at [www.fafsa.gov](http://www.fafsa.gov). FAFSA is free! You should not pay for completing this application. If you need assistance to complete the FAFSA, contact the Financial Aid Office.

4. After the FAFSA application is processed by the Department of Education, the Financial Aid Office will receive a report with the reported information. If your application is selected for verification, the Financial Aid Officer will request you to provide evidence to confirm the information submitted in your application. No financial aid disbursement will be processed until the verification process is completed.

5. After completing your FAFSA application, you can complete your student loan application at [http://www.pupr.edu/orlando/fa-form.asp](http://www.pupr.edu/orlando/fa-form.asp).
Florida Residency Requirement

The Financial Aid Office is responsible to confirm the student’s Florida residency status before disbursing any State fund. To be classified as a Florida resident, the student (or claimant) must present evidence of having established a legal residence in Florida and maintained that legal residence for 12 consecutive months prior to the term in which the Florida resident classification is sought. Students’ residence in Florida must be as a bona fide domiciliary rather than for the purpose of maintaining a mere temporary residence for enrollment in an institution of higher education. The student (and claimant) is required to be a United States citizen, resident alien, parolee, Cuban national, Vietnamese refugee, or other refugee or asylee so designated by the Bureau of Citizenship and Immigration Services.

Students must complete the Affidavit for Florida Residency Classification and submit it with necessary documentation before the first day of classes of the academic period.

Transfer Students

Financial aid awards cannot be transferred automatically from one post-secondary institution to another. The student must correct the FAFSA application to include Polytechnic University’s Code: 014255. After the Financial Aid Office receives your FAFSA results, we can determine your eligibility for the available financial aid programs.

Transfer students with previous student loans can defer paying loan payments if enrolled at least half-time. The deferment will not be automatically granted with your enrollment. To defer a student loan, the student must complete a deferment form and submit it to the Registrar’s Office. The deferment form is available at www.pupr.edu/orlando and at the Financial Aid Office.

Awarding Process

The student’s eligibility for financial aid programs will be determined after the FAFSA application is received and the verification process is completed, if selected. The student’s Expected Family Contribution (EFC) and the cost of attendance will be considered when preparing the award package. The student will not be considered for a Student Loan or for the Federal Work-Study program unless proper program application has been completed. Priority will be given to students with economic need, in order of application processing date, for supplemental aid programs.

The student will receive an Award Letter listing the student aid programs awarded for the academic year. Initial student aid awards are offered based on full time enrollment. Awards may be then adjusted, if applicable, to actual enrollment after the drop/add period for each trimester. Other sources of assistance such as merit awards and private and institutional scholarships will be taken into consideration when preparing the student’s award package.

**Students repeating a course may not be eligible for financial aid for that specific course.

Financial Aid Disbursements
Polytechnic University of PR-Orlando Campus Catalog 2011-2012
Financial aid funds are credited to the student’s institution account to cover tuition costs and fees. The student’s enrollment status and eligibility for the financial aid program will be verified every trimester before disbursing any money. If there is an excess fund paid, a check will be issued to refund the student. If the financial aid is not sufficient to cover all charges, the student is responsible for paying the outstanding balance.

The following are some of the reasons why the student’s aid disbursements may be delayed or cancelled:

- Application submitted after deadline
- Not providing all required documentation before deadline
- Not completing the Entrance Counseling and/or Master Promissory Note for Direct Loan borrowers
- Not keeping the minimum academic load and GPA requirements
- Not making Satisfactory Academic Progress towards the program degree
- Being in default on a student loan or owing a repayment to any Title IV financial aid program

**Student Aid Cancellation and Refusals**

Students may refuse to accept any financial aid awarding. For this purpose, student may notify the Financial Aid Office in writing to refuse an awarded aid prior to it being disbursed. If the student aid has already been disbursed, the student is required to notify in writing within fourteen days of the credit.

**Return of Financial Aid**

Students who drop or withdraw might have to repay portion or the total amount of financial aid received. Students that enroll but do not attend to class will also be required to repay any received financial aid.

If an over award occurs, the student’s award package will be reduced which may result in a repayment. To avoid over awards, students must notify the Financial Aid Office of any potential awards such as private scholarships, vocational rehabilitation benefits, etc., that were not included in the Award Letter.

**Refer to the Federal Financial Aid Return Policy for more information on the calculation procedure and for an example of the calculation. This document is available at www.pupr.edu/orlando.**

**Standards of Satisfactory Academic Progress**

**Standard for Undergraduate Students**

The Standard of Satisfactory Academic Progress establishes the evaluation criteria to determine the student’s academic progress, which is one of the eligibility requirements to participate in
student financial aid from the Title IV of the Federal Department of Education, State, Institutional and Private programs.

The minimum federal components to measure the satisfactory academic progress require three specific measures: qualitative, quantitative, and maximum time to receive Federal aid. These three components provide a measure on the reasonable progress of student to successfully complete the academic career.

**Evaluation Criteria**

**A. Qualitative Measure**

One of the elements of the Standard of Satisfactory Academic Progress is the qualitative measure. This component consists of the grade point average and the total accumulated credits at the end of the academic year.

The Polytechnic University of Puerto Rico, adopts the retention rate (qualitative measure) according to the following chart:

<table>
<thead>
<tr>
<th>Transferred Credits* (1)</th>
<th>Completed Credits at PUPR (2)</th>
<th>Total Earned Credits (1+2)</th>
<th>Minimum Required Grade Point Average (GPA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 36</td>
<td>37 - 72</td>
<td>73 - 108</td>
<td>109 +</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.65</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.00</td>
</tr>
</tbody>
</table>

* Credits transferred from other colleges are not taken into consideration to calculate the grade point average, but they are considered to calculate the student’s level or year.

**B. Quantitative Measure**

The second element of the Standard of Satisfactory Academic Progress is the quantitative measure. This component compares the number of credits attempted by students in the Institution, versus the number of approved credits. The student must approve at least the 66% of all the credits attempted at UPPR. This measure will be cumulative.

**C. Maximum time to receive payments from federal financial aid**

All students must complete the graduation requirements within a maximum equivalent to 1.5 times (150%) of the program degree credits. Preparatory courses will not be considered in the evaluation of the maximum time, but all courses attempted at our Institution will be included.

Students who have completed the maximum time do not qualify for financial aid. The student will receive payment of federal financial aid for preparatory courses up to a maximum of 30 credits.

Example:
Student in Accounting Program
The Accounting Program requires 120 credits to complete the curriculum
Maximum time (120 crds. x 150%) 180 attempted credits

- The credits hours will be used to determine the maximum time.
- The maximum time must be 150% of the credits hours required to complete the program degree.
- All attempted credits, even those in which the student did not receive financial aid, counts towards the established maximum.
- This policy includes and measures students who are enrolled half-time.
- All courses attempted in the institution, except for preparatory courses, will be included. Transferred courses will also be included for the maximum time.
- If a student changes of Major or School (eg. from Engineering to Architecture), will be measured with the new concentration requirements (total of required credits). All courses taken at UPPR, including credits from previous Major/School, credits from the new Major/School as well as transferred credits, will be included.

Students in Probation or Suspension

The Satisfactory Academic Progress of students is evaluated once a year at the end of the academic year (May).

If the student does not meet one or both measures of the Standard of Satisfactory Academic Progress will be classified with a status of probation or suspension. The Financial Aid Office will notify the student about his/her status.

Probation Status

A student in probation status is the one that has not met the Standard of Satisfactory Academic Progress for the first time. If in probation, the student does not qualify for Federal, State and Institutional aids programs. Only students in probation that submit an appeal, and it is approved, are eligible to receive Federal, State and/or Institutional aid.

Procedure for Appealing a Probation Status

1. How the student can appeal a probation status?
   The student must go to www.pupr.edu to complete the Academic Progress Appeal Form and carefully follow the instructions.

2. Where to submit the Appeal Form?
   The student must submit the Appeal Form and supporting documentation before the deadline to the Financial Aid Office.
3. Once submitted, the appeal will be evaluated by the Satisfactory Academic Progress Committee:

- If approved - Continue to step #4
- If denied – You will not be eligible the Federal, State and/or Institutional aid programs until you comply with the Standard of Satisfactory Academic Progress.

4. Plan to improve your academic progress:
   - Once the appeal is approved, the student will be referred to his Mentor or Advisor to establish an academic plan for the next 3 trimesters.
   - Sign the agreement with the Mentor or Advisor who established the academic plan.
   - Submit copy of the established academic plan to the Financial Aid Office to reactivate your financial aids.

5. The academic plan will be evaluated every trimester by your Mentor or Advisor to see if the student is complying with it. While the student complies with his/her academic plan, can continue to be eligible to receive Federal, State and/or Institutional aids as long as he/she meets the other requirements to receive financial aid. If the student does not meet any of the terms set forth in the academic plan, will lose all his/her Federal, State and/or Institutional aids until he/she complies with the Standard of Satisfactory Academic Progress are met.

Suspension Status

Every student that does not overcome the probation status will fall in a suspension status. A student in suspension status does not qualify for Federal, State and/or Institutional aid and cannot appeal this status.

The student may be eligible to receive funds from Federal, State and Institutional aid and loans, when he/she complies with the Standards of Satisfactory Academic Progress again.

Definitions

1. Attempted credits – Enrolled credits at UPPR in which the student has obtained grades of I, I (with grades), A, B, C, D, F or W, WF, NR, including all courses repetitions.

2. Transferred Credits - Credits taken at other Institutions of Higher Education recognized by accrediting agencies that were approved with A, B or C and which are accepted by the Department Director or by the authorized Dean in compliance with the standards of the UPPR.

3. Earned Credits - Credits of courses attempted in the UPPR which obtained grades of A, B, C or D with the exception of specific cases defined by the Department.

4. Grade Point Average (GPA) - The measure of academic merit achieved by the student. It is calculated by dividing the total number of accumulated honor points by the number of credits in which the student has received final grades, including F’s and WF’s which have not been removed.
5. Repeated Courses – Undergraduate courses that the student repeats when it has obtained qualification of D, F, W or WF. For the purpose of determining the Grade Point Average only the highest grade will be used. Repeated courses will be considered in the quantitative measure.

6. Academic Progress – Is the measure which shows whether the student passes the percentage (66%) of the attempted credits versus those approved and whether the academic index is equal to or higher than the established retention index.

7. Academic year - Consists of three academic term that begin in August and end in May. The summer term is optional.

8. Academic Term - Typical academic term during which the regular courses are offered, and which consists of 12 weeks beginning on the first day of school and ending on the last day of final examinations. In summer, the academic term is reduced to 6 weeks, doubling the weekly contact hours.

9. Provisional Grades (Incompletes) - If the Professor gives an incomplete in a course, the student must complete the requirements of the course within the established date in the next academic term. The Professor will remove the incomplete within the established date. If the incomplete is not removed, it will become the provisional grade until the professor changes the grade. Provisional grades are considered in the calculation of the qualitative and the quantitative measures.

10. Courses with grade W - Course from which the student withdraw official and voluntarily. These withdrawals must be authorized by the Financial Aid Office, Registrar Office, Counseling Office, and Finance Office. These courses will be considered in the calculation of the quantitative measure.

11. Preparatory courses (Remedial) - These are basic courses required by the program (includes courses in MATH, SCIE, ATUL, ENGL, SPAN, and others starting with 01xx). These courses will be covered by federal financial aid up to a maximum of 30 credits.

12. Expired credits - Courses approved seven or more years ago in this or other institution will expire at the date of applying for re-admission with the exception of those validated by the Department Director and the Dean of Faculty. The student must repeat all courses declared outdated or must take other equivalent course of the existing curriculum with the approval of the Director of Department and the Dean of the Faculty. These courses are considered for the calculation of the quantitative measure.

13. Suspension of financial aid - Students who at the end of the probation period do not overcome deficiencies with the qualitative and/or quantitative element, or does not comply with the established Academic Plan, will have his/her financial aid suspended. Federal financial aid will also be suspended if the student exceeds the maximum time required to complete his/her program of studies. The maximum time is equal to 150% of the of the program credits. All the attempted credits and transferred courses will be taken into consideration.

14. No Satisfactory Academic Progress (NPAS - suspension) - Classification that is given to the student who at the end of his Financial Aid Probation period does not overcome the
academic deficiencies or has not completed the Academic Plan as agreed. The student does not qualify for Federal, State or Institutional aid.

Standards for Graduate Students

The academic progress of graduate students will be measured as established by the Norms and Procedures of the Evaluation of Student Academic Progress at Graduate Level, page #24 of this catalog.

Student’s Rights and Responsibilities

The student has the right to receive the following information from the Financial Aid Office:

1. Available financial aid programs
2. Application process, deadlines and eligibility requirements
3. Awarding and disbursement procedures
4. What financial aid must be repaid, the terms and schedules for repayment
5. The terms and conditions of any employment that is part of the financial-aid award
6. What is the criterion for maintaining satisfactory academic progress and how to re-establish eligibility.
7. Institution’s refund policy for students that withdraw from school

It will be student’s responsibility to:

1. Comply with deadlines.
2. Provide all required documents in a timely fashion.
3. Provide the Financial Aid Office with information on changes in family’s household, income or enrollment status.
4. Inform the Financial Aid Office of any outside scholarships, vocational rehabilitation benefits, tuition assistance or VA benefits that will be receiving during the academic year.
5. Use any financial aid received from federal or state programs for expenses related to his/her education.
6. Notify any change in name, social security, citizenship status, address, phone number and e-mail address.
7. Understand and comply with the policies regarding to refunds, repayments and satisfactory academic progress.
8. Complete the Exit Counseling for federal student loans programs before departure from college.

Privacy Notice

The Financial Aid Office ensures the confidentiality of students’ records. For this reason, confidential information will not be released by email or phone to the student. In addition, no information will be released to any third party, unless legally required to do so, without a written authorization from the student. This includes parents, spouse, siblings or friends.

For further information on financial aid programs, feel free to contact the Financial Aid Office.
VI. STUDENT INFORMATION AND SERVICES

STUDENT SERVICES

The Student Services Department offers students the opportunity to seek assistance in various aspects of the university, such as course registration, advisement, career information, and guidance in the personal, vocational, and educational aspects that may hinder the students from attaining a college education. It aims at assisting the student individually in making appropriate educational, vocational and personal choices. Among other new activities undertaken by the Student Services Department is providing or taking the lead in the following endeavors:

- a) New Student Orientation
- b) Pre-registration and Registration of new students
- c) Faculty training in:
  1. Mentoring
  2. Use of the MIS in Academic Advisement
  3. Disabilities Act
  4. Specific Learning Problems
  5. Emotional Issues in the Learning Teaching Process
  6. Training students and faculty in the recognition, prevention and intervention in issues related to drug, alcohol, violence, harassment, ADA and contemporary social, cultural, professional and environment affairs.

REGISTRAR’S OFFICE

The Registrar’s Office is primarily concerned with custody of the student’s academic record. Given the office’s mission of providing registration services, there are a number of related services that must be attended to that assure the integrity of the academic records and recording systems. The related services that are performed by this office are: Registration, Readmission, Withdrawal, Mid-term and Final grades, Certification, Transcripts, Academic Calendar, Graduation Evaluation and others.

STUDENT COUNCIL AND STUDENT ORGANIZATIONS AND ACTIVITIES

The Student Council is the representative organization of the students. It aims to express student opinions and promote communication and cooperation among students, faculty, and administrative personnel. Representatives of the Student Council are voting members in various University Wide Standing Committees such as the Academic Council, Library Committee, Student Affairs Committee, Discipline Committee and others.
GUIDANCE AND CAREER EDUCATION
The Academic Office offers students curriculum assistance, career information, and guidance in the personal, vocational, and academic aspects that may impede the student’s attaining a college education. Counselors assist students individually in making appropriate educational, vocational, and personal choices. The office coordinates assisted institutional services for special needs students.

Course selection is critical to student success; therefore, students should make an appointment with either their program director or registrar to confirm proper course selection prior to registration.

Previously taken courses and the grades earned will be reviewed and analyzed for proper course placement at Polytechnic University of Puerto Rico - Orlando Campus.

Career education awareness is presented at workshops, seminars, colloquiums and receptions with notables. Student publications may also feature stories on career opportunities.

INTERNSHIP AND MENTOR PROGRAMS
Students may be able to participate in local and national work related experiences pertinent to their course of study. Career awareness and placement activities are incorporated in student life as a pre-step to applying for a summer internship. Internships are optional, but preferred experience for students.

Students are eligible for mentor assistance as another form of a personal career guidance opportunity. Community leaders and business professionals collaborate with students on a one-on-one basis as needed, or present vital information at open forums on campus.

IDENTIFICATION CARDS
An identification card (Campus Card) is issued to students during the registration period. The identification card is needed for students to obtain access to Polytechnic University of Puerto Rico - Orlando Campus’s facilities and services.

ACTIVITIES AND ORGANIZATIONS
There are opportunities for students to reinforce their curricular experience by participating in curricular related activities such as colloquium, workshops, seminars and one-on-one meetings with notable community leaders. Campus organizations focus on the adult learner who may be employed and offers a mature level of activity. Events are designed to foster greater career opportunities as well as recognize students for their academic achievement.

LIBRARY FACILITIES
The Orlando and Miami Campus Libraries are well-equipped for student use. Both libraries maintain computer-based and hard-bound periodicals for student and faculty use. Both Florida Campus libraries have basic collections that are strengthened and supported by the main library.
in San Juan, Puerto Rico that consists of over 65,000 volumes classified according to the Library of Congress Classification System. The main Library is specialized in land surveying, engineering, architecture and business administration. At the present time, the Library subscribes to over 2,000 periodicals and publications, both general and technical. Both Libraries are fully automated in services and administrative procedures. As part of its services, the Libraries offer access to a Local Area CD Rom Network, Internet, and other data base services. Also interlibrary loans are used for resources not owned by the Library. The Orlando and Miami Campus Libraries are part of library consortiums for the state of Florida. The administrative and technical procedures are jointly operated by the Main Library and Branch Campus Libraries. To help students develop information skills and become independent users/researchers, the Libraries have a literacy skills program, as well as audiovisual equipment.

HONOR CODE
ACADEMIC AND PROFESSIONAL BEHAVIORAL CODE OF CONDUCT

General
The purpose of this section is to clarify as much as possible what the student and the University should expect of each other in the area of rights, responsibilities, and conduct.

All students enrolled at Polytechnic University of Puerto Rico - Orlando Campus assume an obligation to conduct themselves at all times as responsible members of the campus community and respect the personal and property rights of others and the educational mission of the University. Because the University’s reputation is ultimately determined by those who earn a degree, the University will insist upon its students demonstrating personal and professional integrity in addition to academic excellence. The University’s Board of Trustees has delegated full authority to the University administration to prepare and administer policies and procedures for the welfare and discipline of its students.

Student Rights and Responsibilities
Polytechnic University of Puerto Rico - Orlando Campus recognizes the rights of students as outlined in the American Association of University professors’ Joint Statement, dated 1967. These rights include the following:

1. Freedom of access to higher education
2. Freedom of classroom expression
3. Confidentiality of records
4. Participation in student affairs
5. Off-campus freedoms
6. Procedural standards in disciplinary proceedings

Code of Conduct
The University is dedicated to the advancement of knowledge and learning, as well as to the development of responsible personal and social conduct. Each student, by registering, assumes the responsibility of becoming familiar with and abiding by the general standards of conduct expected by the University. Specifically, each student is expected to refrain from:

1. Academic dishonesty of any kind with respect to examinations or course work. This includes any form of cheating and plagiarism. (see Academic Dishonesty and Plagiarism section).
2. Falsification or alteration of University documents, records, or identification cards.

3. Forgery, issuing bad checks, or not paying financial obligations to the University.

4. Theft and the deliberate damaging or misusing of property belonging to others and the property of the University.

5. The manufacture, possession, use, or distribution of any form of alcoholic beverages or illegal drugs while on University property.

6. Possession, display or use of any dangerous instrument; weapon or explosives (law enforcement officers required by their employer to carry a firearm are excluded).

7. Disrupting the study of others or of University activities, or interfering with the freedom of movement of any member or guest of the University community.

8. Deliberate interference with academic freedom and freedom of speech and movement of any member or guest of the University community.

9. Participation in any activity which disrupts or interferes with the education of others or the orderly operation of the University.

10. Physical abuse, threatening acts or harassment, toward others.

Expulsion, suspension, or any lesser penalty may be imposed upon any student enrolled who is found to be in violation of these standards of conduct.

Harassment
Polytechnic University of Puerto Rico - Orlando Campus does not tolerate any form of employee or student harassment, either verbal or physical, based on race, color, religion, gender, national origin, age, physical disability, medical condition, or marital status. The University strives to provide a work environment free of sexual harassment. Harassment on the basis of sex is a violation of Section 703 of Title VII of the Civil Rights Act of 1964. It is a policy of the University that sexual harassment of employees or students is regarded as unprofessional and improper conduct.

Sexual harassment is defined as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual or otherwise offensive nature.

Conduct of this nature is improper whether, a) submission to the conduct is either an explicit or implicit term or condition of employment or student status; b) submission to or rejection of the conduct is used as a basis of employment or student standing; c) the conduct has the effect of substantially interfering with an individual’s work or academic performance; or d) the conduct or sexually suggestive conduct or language has the effect of causing uncomfortable living or working conditions.

All employees and students of the University are expected to avoid any behavior or conduct toward any other employee or student that could be interpreted as sexual harassment.
Students who believe they have been the victim of sexual or other harassment should immediately report the matter to their advisor or, if necessary, to an administrator or a faculty member.

Any faculty member or administrator who has received a complaint from an employee or student alleging harassment will immediately notify the Campus Director. Similarly any administrator, faculty member or supervisor who becomes aware of a situation involving potential harassment of an employee or student will contact the Campus Director.

All complaints of harassment will be investigated promptly and will be kept confidential to the extent possible. Appropriate disciplinary action will be taken against any employee or student found to have engaged or abetted in harassment.

**Alcohol and Drug Abuse**
University policy strictly prohibits consumption or use of alcohol and illegal drugs on University property. It is the obligation of all members of the University, as well as students, to uphold the laws of the federal, state and local authorities that regulate the use of drugs and alcohol.

Any violations that cannot be handled through counseling, or which endanger the welfare of the person involved or the community will be reported to law enforcement authorities. Any student or member of the University found guilty of a drug or alcohol felony is subject to dismissal from the University and prosecution consistent with local, state and federal law. Information regarding the prevention of alcohol and drug abuse is posted visibly around the University campus.

**Academic Dishonesty and Plagiarism**
The University seeks to foster a spirit of honesty and integrity. Any work submitted by a student must represent original work produced by that student. Any source used by a student is to be documented through normal scholarly references and citations, and the extent to which any sources have been used must be apparent to the reader. The University, further, considers resubmission of a work produced for one course in a subsequent course or the submission of work done partially or entirely by another to be academic dishonesty. It is the student’s responsibility to seek clarification from the course instructor about how much help may be received in completing an assignment or exam or project or what sources may be used. Students found guilty of academic dishonesty or plagiarism shall be liable for sanctions up to and including dismissal from the University.

The University requires students to adhere to the writing style prescribed in the Publication Manual of the American Psychological Association, Fourth Edition, 1995. This manual includes clear definitions of plagiarism, paraphrasing and other related matters. All students are urged to acquire and use this manual early in their studies at the University.

The University’s policies call for all written work to be submitted typed and “in standard written English.” If necessary, students may employ an editor to assist with grammar and style, but not content. The editor’s name, address, and telephone number must appear on the document and the student’s unedited work must be attached.

**Dual Relationships with Students**
In the interest of avoiding situations in which students may feel that they (or other students) are receiving special attention or privileges, all University faculty and staff are advised to totally avoid any financial relationships with students (or their employers) as long as there is any
potential for the University employee to influence the student’s grades, progress, or success in our programs. Similarly, faculty and staff members are advised to avoid close personal relationships with students. Even if a relationship is “above board,” the appearance of favoritism can be a problem.

Gifts from Students
Students (individuals or groups) are asked not to offer gifts to members of the University faculty or staff. If an employee has done an outstanding job or provided exceptional service (and we hope that occurs regularly), a short note of appreciation or a verbal “thanks” is ample reward.

Collection for group gifts for faculty or staff can easily be perceived as coercive if some students in a class do not share the organizers’ enthusiasm or financial means. Gifts can become a dangerous norm and can be seen as leading to preferential treatment.

If a student (or group) offers a gift, employees have been advised to express appreciation and explain that our policies prohibit accepting gifts. General tokens of appreciation such as flowers for the lobby or snacks to be shared by employees and students do not violate the policy or its intent.

Academic Credentials
The University maintains a strong commitment to developing practitioners who demonstrate high levels of professionalism. All students are expected to pursue their academic programs with honesty and integrity.

Evaluation of Instructors by Students
At the conclusion of in-residence courses and upon the completion of on-line or independent studies, students will be asked to provide candid feedback regarding their perceptions of the quality of the course and the performance of the course instructor. All students are expected to participate in these evaluation sessions as student input is an important contribution to the University’s efforts to improve its programs.

Evaluation of Student Support Services
Two times a year, a Student Services Survey is sent to all students to provide evaluative feedback of the following: physical facilities and equipment, classroom environment, registration process, financial aid, student records, library staff and resources, computer access and equipment, textbooks and materials, academic advising, faculty access and interaction, international student concerns, etc. The Survey also gives each student an opportunity to make general comments and suggestions regarding the University.

All students are urged to participate in these evaluation activities, as student input is an important component of the University’s efforts to improve its programs and enhance student services and support.

Grievance Procedures
The University provides students with opportunities to request administrative or peer review of actions taken by University faculty or staff that the student perceives to be unfair. Students who believe that they have been treated in a biased fashion, in violation of University policies or without due process may file an appeal with the Campus Director or designee. The student may initiate the grievance process by sending the Campus Director a written account of the actions
leading to the grievance and a description of the student’s attempts to resolve it informally (if any).

The Campus Director or a designee will contact the involved parties directly and will attempt to resolve the matter informally. If a satisfactory resolution is not achieved informally, the Campus Director will convene a committee of faculty members and/or administrators to consider the matter and recommend a resolution. Considering the recommendation of the committee, the Campus Director will again contact the parties involved and inform them of the University’s response to the appeal.
VII. UNDERGRADUATE PROGRAMS

SCHOOL OF MANAGEMENT

The School of Management seeks to provide theoretical and practical knowledge to those students who aim to receive a Bachelor Degree in Business Administration or Science in Organizational Management. The School of Management is guided by the following principles: The business programs contribute to the intellectual and professional formation of students through the development of critical and analytical thinking skills. It fosters the necessary motivation that will enable students to know and relate to the reality of the entrepreneurial world. The Department develops in students the awareness of the social responsibility of management within the economic system of free enterprise. The academic programs encourage the exploration and study of the field of business and management. Students are exposed to the various areas of business to include Accounting, Management, Marketing, Economics, Statistics, and Finance, and their applications in a corporate, service or manufacturing environment.

Mission
The School of Management of Polytechnic University of Puerto Rico - Orlando Campus provides opportunities for individuals from diverse backgrounds to cultivate their potential for leadership, productivity and competitiveness with a sense of social responsibility toward their communities, through the exposure to intellectual, humanistic and technological advancement in business and management.

Career Opportunities
Business Administration and Organizational Management students are highly regarded and sought by service, manufacturing, and production industries. Graduates have been provided the knowledge and skills to meet the needs and demands of an ever-changing society. Through various internships, students are exposed to various career positions in business. Graduates can assume career roles such as Accountants, Information Technology Managers, Sales and Marketing Managers, and a variety of managerial supervisory positions in both profit and non-profit organizations.

Program Educational Objectives
The School of Management academic program objectives are:
- Develop technically educated individuals for employment as business administrators or entrepreneurs in their communities.
- Develop graduates with a well-developed social conscience.
- Develop of competitive graduates for advanced study in the areas of business.

Degrees Offered
Currently, the School of Management offers the following degrees:

- Bachelor of Business Administration (BBA)
  - Management of Information Systems; Marketing, Accounting, General Management; and Construction Management
Bachelor of Science in Organizational Management (BSOM)
*not all programs are offered at each location, please contact the campus for specific information

PROGRAM ENTRANCE

All students that request admission and are admitted to the business programs must show evidence that they have acquired the academic abilities and skills necessary to progress through the major program of study. Those who do not have these abilities and skills as reflected by the results of their (1) College Entrance Examination Board exam, (2) High School grades, (3) previous college experience, (4) PUPR Math & English Assessment Tests or (5) other evidence, will be required to take additional courses to gain the knowledge. Thus, there may be variations on how to fulfill the Minimum Graduation Requirements stated below. The component of these courses, if required, is in addition to the credits of the Business Administration or Organizational Management degree program. The following is a partial list of preparatory courses offered by the university:

PREPARATORY COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0102</td>
<td>Preparatory Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 0100</td>
<td>Preparatory English</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 0110</td>
<td>English Grammar</td>
<td>3</td>
</tr>
<tr>
<td>ENC 1003</td>
<td>Advanced English Preparatory</td>
<td>3</td>
</tr>
</tbody>
</table>

Students enrolled in one of the academic programs of the School of Management will need to have successfully prepared for their studies within the school. An articulation agreement or transfer program has been signed with many area community colleges to accept students who have earned an Associate Degree in a related field. In many cases, all or most of the 60 credit hours completed by students in the community colleges count towards the BBA program and will transfer into the School of Management at Polytechnic University of Puerto Rico - Orlando Campus.

BACHELOR OF BUSINESS ADMINISTRATION PROGRAM

The student must complete the following minimum requirements to earn the BBA degree:

GENERAL EDUCATION COURSES – 30 credit hours
12 credit hours in Humanities
   (6 credit hours must include English Composition I and II)
9 credit hours in Social Sciences
9 credit hours in Mathematics/Sciences
   (3 credit hours must include College Algebra)
BUSINESS FOUNDATION — 15 credit hours
9 credit hours must include Accounting I and II, Principles of Management

ELECTIVES – 18 credit hours

CORE COURSES – 27 credit hours

ACADEMIC TRACK
BBA Management Information Systems – 30 credit hours
BBA Marketing – 30 credit hours
BBA Accounting – 32 credit hours
BBA General Management – 30 credit hours
BBA Construction Management – 30 credit hours

(This program may use Dual Courses to complete the curriculum)

ACCOUNTING DISCLOSURE
The accounting concentration and courses provided knowledge that may support a student’s efforts toward CPA certification. However, this concentration is not necessarily designed to meet various requirements among individual state guidelines. It is the responsibility of the student to check with regional authorities to confirm requirements in preparation for certification.

BBA GENERAL EDUCATION COURSES (30 Credit Hours)

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC 1101</td>
<td>English Composition I</td>
<td>3</td>
<td>Placement Test or Remedial Course</td>
</tr>
<tr>
<td>ENC 1102</td>
<td>English Composition II</td>
<td>3</td>
<td>ENC 1101</td>
</tr>
<tr>
<td>LIT 2411</td>
<td>Literature and Culture Issues</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>HUE 1999</td>
<td>Selected Topics in Humanities</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>PSY 2012</td>
<td>Introduction to Psychology</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>SYG 2000</td>
<td>Introduction to Sociology</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>SSE 1999</td>
<td>Selected Topics in Social Science</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MAC 1105</td>
<td>College Algebra</td>
<td>3</td>
<td>Placement Test or Remedial Course</td>
</tr>
<tr>
<td>PSC 1121</td>
<td>Physical Science</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>CGS 1100</td>
<td>Computer Science</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

BBA BUSINESS FOUNDATION COURSES (15 Credit Hours)

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT - HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 2001</td>
<td>Principles of Accounting I</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>ACC 2011</td>
<td>Principles of Accounting II</td>
<td>3</td>
<td>ACC 2001</td>
</tr>
<tr>
<td>MGT 2021</td>
<td>Principles of Management</td>
<td>3</td>
<td>None</td>
</tr>
</tbody>
</table>

Choose two (2) of the following courses:

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT - HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUL 2241</td>
<td>Business Law I</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>ECO 2013</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>COURSE NUMBER</td>
<td>COURSE TITLE</td>
<td>CREDIT - HOURS</td>
<td>PRE-REQUISITES</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>ECO 2023</td>
<td>Principles of Microeconomics</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MAR 1011</td>
<td>Principles of Marketing</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>FIN 2000</td>
<td>Principles of Finance</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>15</strong></td>
<td></td>
</tr>
</tbody>
</table>

**BBA ELECTIVE COURSES (18 Credit Hours)**

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives</td>
<td>General Elective</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Elective</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Elective</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Elective</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Elective</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>18</strong></td>
<td></td>
</tr>
</tbody>
</table>

**BBA CORE COURSES (27 Credit Hours)**

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT - HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 3640</td>
<td>Organizational Communications</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>COM 3010</td>
<td>Database Management</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 3620</td>
<td>Organizational Behavior</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>STA 2010</td>
<td>Probability and Statistics</td>
<td>3</td>
<td>MAC 1105</td>
</tr>
<tr>
<td>MGT 3650</td>
<td>Business Law &amp; Ethics</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>ISY 3510</td>
<td>Management of Information Systems</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 3110</td>
<td>Managerial Accounting</td>
<td>3</td>
<td>ACC 2011</td>
</tr>
<tr>
<td>MGT 4630</td>
<td>International Business</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 4620</td>
<td>Strategic Management</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>27</strong></td>
<td></td>
</tr>
</tbody>
</table>

**BBA TRACK COURSES**

**MANAGEMENT INFORMATION SYSTEMS OFFERINGS**

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT - HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISY 3540</td>
<td>Computer and Information Technology</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>ISY 3550</td>
<td>Data Communications and Networks I</td>
<td>3</td>
<td>COM 3010</td>
</tr>
<tr>
<td>ISY 4510</td>
<td>Systems Analysis and Design</td>
<td>3</td>
<td>ISY 3510</td>
</tr>
<tr>
<td>ISY 4520</td>
<td>Computer Security and Audit</td>
<td>3</td>
<td>ISY 3510</td>
</tr>
<tr>
<td>ISY 4530</td>
<td>Local Area Network Systems</td>
<td>3</td>
<td>ISY 3550</td>
</tr>
<tr>
<td>MGT 4570</td>
<td>Management Information Systems Practice</td>
<td>3</td>
<td>Senior Standing</td>
</tr>
<tr>
<td>CEC 3000</td>
<td>Object Oriented Programming (C/C++) I</td>
<td>3</td>
<td>MAT 2000 or MAC 1105</td>
</tr>
<tr>
<td>CEC 3070</td>
<td>Visual Basic Programming</td>
<td>3</td>
<td>CEC 3000</td>
</tr>
<tr>
<td>Electives</td>
<td>Department Directed Electives</td>
<td>6</td>
<td>See Catalog</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>30</strong></td>
<td></td>
</tr>
</tbody>
</table>
### MARKETING OFFERINGS

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MARK 3410</td>
<td>Sales &amp; Retail Management</td>
<td>3</td>
<td>MAR 1011</td>
</tr>
<tr>
<td>MARK 3430</td>
<td>Product Management</td>
<td>3</td>
<td>MAR 1011</td>
</tr>
<tr>
<td>MARK 3450</td>
<td>Advertising</td>
<td>3</td>
<td>MAR 1011</td>
</tr>
<tr>
<td>MARK 3460</td>
<td>Public Relations</td>
<td>3</td>
<td>MAR 1011</td>
</tr>
<tr>
<td>MARK 4410</td>
<td>Marketing Research</td>
<td>3</td>
<td>MAR 1011, STA 2010, CGS 1100</td>
</tr>
<tr>
<td>MARK 4470</td>
<td>Marketing Project</td>
<td>3</td>
<td>Academic Dept. Authorization</td>
</tr>
<tr>
<td>Elective</td>
<td>Department Directed Electives</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Elective</td>
<td>Department Directed Electives</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Elective</td>
<td>Department Directed Electives</td>
<td>6</td>
<td>See Catalog</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>30</strong></td>
<td></td>
</tr>
</tbody>
</table>

### ACCOUNTING OFFERINGS

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 3310</td>
<td>Cost Accounting</td>
<td>3</td>
<td>ACC 2001</td>
</tr>
<tr>
<td>ACC 3320</td>
<td>Computer Applications in Accounting</td>
<td>3</td>
<td>ACC 2001/ CGS 1100</td>
</tr>
<tr>
<td>ACC 3330</td>
<td>Intermediate Accounting I</td>
<td>4</td>
<td>ACC 2011</td>
</tr>
<tr>
<td>ACC 3340</td>
<td>Intermediate Accounting II</td>
<td>4</td>
<td>ACC 3330</td>
</tr>
<tr>
<td>ACC 3360</td>
<td>Federal Income Taxes</td>
<td>3</td>
<td>ACC 2011</td>
</tr>
<tr>
<td>ACC 4310</td>
<td>Advanced Accounting</td>
<td>3</td>
<td>ACC 3340</td>
</tr>
<tr>
<td>ACC 4320</td>
<td>Auditing</td>
<td>3</td>
<td>ACC 2011</td>
</tr>
<tr>
<td>MGT 4670</td>
<td>Management Practices</td>
<td>3</td>
<td>Senior Standing</td>
</tr>
<tr>
<td>Electives</td>
<td>Department Directed Electives</td>
<td>6</td>
<td>See Catalog</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>32</strong></td>
<td></td>
</tr>
</tbody>
</table>

### GENERAL MANAGEMENT OFFERINGS

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 3610</td>
<td>Human Resources Management</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 3630</td>
<td>Organizational Development</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 4610</td>
<td>Total Quality Management</td>
<td>3</td>
<td>STA 2010</td>
</tr>
<tr>
<td>MGT 4670</td>
<td>Management Practices</td>
<td>3</td>
<td>Senior Standing</td>
</tr>
<tr>
<td>Electives</td>
<td>Department Directed Electives</td>
<td>18</td>
<td>See Catalog</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>30</strong></td>
<td></td>
</tr>
</tbody>
</table>

### CONSTRUCTION MANAGEMENT OFFERINGS

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 3210</td>
<td>Construction Management</td>
<td>3</td>
<td>MGT 2021</td>
</tr>
<tr>
<td>MGMT 3220</td>
<td>Construction Contracts and Legal Documents</td>
<td>3</td>
<td>MGT 3650</td>
</tr>
<tr>
<td>MGMT 3230</td>
<td>Construction Materials and Methods</td>
<td>3</td>
<td>MAC 1105 &amp; MGMT 3210</td>
</tr>
<tr>
<td>COURSE NUMBER</td>
<td>COURSE TITLE</td>
<td>CREDIT -HOURS</td>
<td>PRE-REQUISITES</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------------</td>
<td>---------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>MGMT 3240</td>
<td>Construction Costs and Estimates</td>
<td>3</td>
<td>FINA 2000 &amp; MGMT 3210</td>
</tr>
<tr>
<td>MGMT 4210</td>
<td>Project Planning and Control (PERT)</td>
<td>3</td>
<td>MGMT 3210</td>
</tr>
<tr>
<td>MGMT 4270</td>
<td>Construction Management Project</td>
<td>3</td>
<td>Academic Dept. Authorization</td>
</tr>
<tr>
<td>Electives</td>
<td>Department Directed Electives</td>
<td>12</td>
<td>See Catalog</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

### BBA FLOW CHART

- **General Education**
  - (30 credit hours)

- **Business Foundation**
  - (15 credit hours)
  - must include: Accounting I & II and Management
  - Electives
  - (18 credit hours)

- **BBA Core Requirements**
  - (27 credit hours)
  - MGT 3640 – Organizational Communications
  - COM 3010 – Database Management
  - MGT 3620 – Organizational Behavior
  - STA 2010 – Probability and Statistics
  - MGT 3650 – Business Law & Ethics
  - ISY 3510 – Management of Information Systems
  - MGT 3110 – Managerial Accounting
  - MGT 4630 – International Business
  - MGT 4620 – Strategic Management

- **Academic Tracks**

- **Management Information Sys.**
  - 30 credit hours
  - CEC 3000
  - CEC 3070
  - ISY 3540
  - ISY 3550
  - ISY 4510
  - ISY 4520
  - ISY 4530
  - MGT 4570
  - Business Elective
  - Business Elective

- **Marketing**
  - 30 credit hours
  - MARK 3410
  - MARK 3430
  - MARK 3450
  - MARK 3460
  - MARK 4410
  - MARK 4470
  - Business Elective
  - Business Elective
  - Business Elective

- **Accounting**
  - 32 credit hours
  - ACC 3310
  - ACC 3320
  - ACC 3330
  - ACC 3340
  - ACC 3360
  - ACC 4310
  - ACC 4320
  - MGT 4670
  - Business Elective
  - Business Elective
  - Business Elective

- **General Management**
  - 30 credit hours
  - MGT 3610
  - MGT 3630
  - MGT 4610
  - MGT 4670
  - Business Elective
  - Business Elective
  - Business Elective
  - Business Elective
  - Business Elective

- **Construction Management**
  - 30 credit hours
  - MGMT 3210
  - MGMT 3220
  - MGMT 3230
  - MGMT 3240
  - MGMT 4210
  - MGMT 4270
  - Business Elective
  - Business Elective
  - Business Elective
  - Business Elective

- Total hours of program: 120 - 122 credit hours
BACHELOR OF SCIENCE IN ORGANIZATIONAL MANAGEMENT PROGRAM

Students must complete the following minimum requirements to earn the BSOM degree:

GENERAL EDUCATION COURSES – 30 credit hours
- 12 credit hours in Humanities
  - (6 credit hours must include English Composition I and II)
- 9 credit hours in Social Sciences
- 9 credit hours in Mathematics/Science
  - (3 credit hours must include College Algebra)

BUSINESS FOUNDATION – 9 credit hours (choice of three)
- Accounting, Macroeconomics, Microeconomics, Finance, Marketing, Management

ELECTIVES – 30 credit hours

CORE COURSES – 27 credit hours

ACADEMIC TRACK – 24 credit hours

(This program may use Dual Courses to complete the curriculum)

<table>
<thead>
<tr>
<th>BSOM GENERAL EDUCATION COURSES (30 Credit Hours)</th>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC 1101</td>
<td>English Composition I</td>
<td>3</td>
<td>Placement Test or Remedial Course</td>
<td></td>
</tr>
<tr>
<td>ENC 1102</td>
<td>English Composition II</td>
<td>3</td>
<td>ENC 1101</td>
<td></td>
</tr>
<tr>
<td>LIT 2411</td>
<td>Literature and Culture Issues</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>HUE 1999</td>
<td>Selected Topics in Humanities</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>PSY 2012</td>
<td>Introduction to Psychology</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SYG 2000</td>
<td>Introduction to Sociology</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SSE 1999</td>
<td>Selected Topics in Social Science</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>MAC 1105</td>
<td>College Algebra</td>
<td>3</td>
<td>Placement Test or Remedial Course</td>
<td></td>
</tr>
<tr>
<td>PSC 1121</td>
<td>Physical Science</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>CGS 1100</td>
<td>Computer Science</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>30</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BSOM FOUNDATION COURSES (9 Credit Hours)</th>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 2001</td>
<td>Principles of Accounting I</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>FIN 2000</td>
<td>Principles of Finance</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>MAR 1011</td>
<td>Principles of Marketing</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>9</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### BSOM ELECTIVE COURSES (30 Credit Hours)

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives</td>
<td>General Electives</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Electives</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Electives</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Electives</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Electives</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Electives</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Electives</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Electives</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Electives</td>
<td>3</td>
<td>See Catalog</td>
</tr>
<tr>
<td>Electives</td>
<td>General Electives</td>
<td>3</td>
<td>See Catalog</td>
</tr>
</tbody>
</table>

**TOTAL** 30

### BSOM CORE COURSES (27 Credit Hours)

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 3640</td>
<td>Organizational Communications</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 3620</td>
<td>Organizational Behavior</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 3120</td>
<td>Critical Thinking for Managers</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 3220</td>
<td>Leadership in Organizations</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 3650</td>
<td>Business Law &amp; Ethics</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>ISY 3510</td>
<td>Management of Information Systems</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 3210</td>
<td>Managing Diversity in the Workplace</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 4630</td>
<td>International Business</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 4620</td>
<td>Strategic Management</td>
<td>3</td>
<td>None</td>
</tr>
</tbody>
</table>

**TOTAL** 27

### ORGANIZATIONAL MANAGEMENT ACADEMIC TRACK OFFERING

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGT 3610</td>
<td>Human Resources Management</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 4020</td>
<td>Project Management</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 4030</td>
<td>Financial Management</td>
<td>3</td>
<td>ACC 2011 (BBA) FIN 2000 (BSOM)</td>
</tr>
<tr>
<td>MGT 4130</td>
<td>Managing Change</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 4230</td>
<td>Marketing Management</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGT 4410</td>
<td>Quality Assurance</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>Electives</td>
<td>Department Directed Electives</td>
<td>6</td>
<td>See Catalog</td>
</tr>
</tbody>
</table>

**TOTAL** 24
BSOM FLOW CHART

General Education
(30 credit hours)

Business Foundation
(9 credit hours)
  Electives
(30 credit hours)

BSOM Core Requirements
(27 credit hours)
MGT 3640 – Organizational Communications
MGT 3120 – Critical Thinking for Managers
MGT 3620 – Organizational Behavior
MGT 3220 – Leadership in Organizations
MGT 3650 – Business Law & Ethics
ISY 3510 – Management of Information Systems
MGT 3210 – Managing Diversity in the Workplace
MGT 4630 – International Business
MGT 4620 – Strategic Management

BSOM ACADEMIC TRACK
(24 credit hours)
  MGT 3610
  MGT 4020
  MGT 4030
  MGT 4130
  MGT 4230
  MGT 4410
  Business Elective
  Business Elective

Total hours of program: 120 credit hours
SCHOOL OF ENGINEERING

The School of Engineering provides students an opportunity to grow knowledgeable in the theoretical, technical, social, cultural and practical aspects of the profession, and thus be able to enter and excel in the engineering industries. Towards such end, the school’s well-balanced curriculum is both structured and flexible for student learning. The School’s program of studies will prepare students to face situations of considerable complexity, comprehensiveness and social responsibility, at the same time allowing for personal interests to mature in individually chosen fields. The School offers engineering degrees in civil, electrical and computer areas.

Mission
The School of Engineering of Polytechnic University of Puerto Rico - Orlando Campus provides opportunities for individuals from diverse backgrounds to cultivate their potential for leadership, productivity and competitiveness with a sense of social responsibility toward their communities, through the exposure to intellectual, humanistic and technological advancement in engineering and computer science.

Career Opportunities
Engineering students are highly regarded and sought by service, manufacturing, and production industries. Graduates have been provided the knowledge and skills to meet the needs and demands of an ever-changing society. Through various internships, students are exposed to various career positions in engineering. Graduates can assume various career roles such as Computer Programmers and Engineers within specific areas of specialty, and a variety of professional positions in both profit and non-profit organizations.

Program Educational Objectives
The School of Engineering and Computer Science academic program objectives are:

- Develop technically educated individuals for employment as engineers or computer science technologists in their communities.
- Develop graduates with a well-developed social conscience.
- Develop competitive graduates for advanced study in the areas of engineering or computer science.

Degrees Offered
Currently, the School of Engineering offers the following degrees:

- Bachelor of Science in Civil Engineering (BSCE)
- Bachelor of Science in Electrical Engineering (BSEE)
- Bachelor of Science in Computer Engineering (BSCPE)
- Bachelor of Science in Computer Science (BSCS)
PROGRAM ENTRANCE

All students that request admission and are admitted to the engineering programs must show evidence that they have acquired the academic abilities and skills necessary to progress through the major program of study. Those who do not have these abilities and skills as reflected by the results of their (1) College Entrance Examination Board exam, (2) High School grades, (3) previous college experience, or (4) other evidence, will be required to take additional courses to gain the knowledge. Thus, there may be variations on how to fulfill the Minimum Graduation Requirements stated below. The component of these courses, if required, is in addition to the credits of the Engineering degree program. The following is a partial list of preparatory courses offered by the university:

PREPARATORY COURSES

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0102</td>
<td>Preparatory Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 0110</td>
<td>Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1330</td>
<td>Pre-calculus I</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 0100</td>
<td>Preparatory English</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 0110</td>
<td>English Grammar</td>
<td>3</td>
</tr>
<tr>
<td>ENC 1003</td>
<td>Advanced English Preparatory</td>
<td>3</td>
</tr>
</tbody>
</table>

Students enrolled in one of the academic programs of the School of Engineering will need to have successfully prepared for their studies within the school.

These programs are designed to provide the students with the tools that will empower them to solve high complexity problems in innovative ways, using state of the art technology. The Bachelor of Science in Civil, Electrical and Computer Engineering are designed to accept students directly from high school or Community College students who have earned an Associate Degree in a related field.

BACHELOR OF SCIENCE IN CIVIL ENGINEERING (BSCE)

The student must complete the following minimum requirements to earn the Bachelor of Science in Civil Engineering degree (128 credit hours):

GENERAL EDUCATION COURSES – 41 credit hours

BSCE CORE COURSES – 40 credit hours

BSCE ACADEMIC TRACK COURSES – 47 credit hours

(This program may use Dual Courses to complete the curriculum)
### BSCE PROGRAM

<table>
<thead>
<tr>
<th>REQUIRED CREDIT-HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
</tr>
<tr>
<td>CE Core</td>
</tr>
<tr>
<td>CE Academic Track</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

### GENERAL EDUCATION – 41 credit hours

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Humanities – 12 credit hours</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENC 1101</td>
<td>English Composition I</td>
<td>3</td>
<td>Placement Test or Remedial Course</td>
<td></td>
</tr>
<tr>
<td>ENC 1102</td>
<td>English Composition II</td>
<td>3</td>
<td>ENC 1101</td>
<td></td>
</tr>
<tr>
<td>SPC 1026</td>
<td>Speech Communication Fundamentals</td>
<td>3</td>
<td>ENC 1101</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elective course in Humanities</td>
<td></td>
<td>(Choose one of the following courses)</td>
<td></td>
</tr>
<tr>
<td>ARH 1000</td>
<td>Art Appreciation</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>HUM 1020</td>
<td>Humanities</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>LIT 2411</td>
<td>Literature and Culture Issues</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>MUL 1010</td>
<td>Music Appreciation</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SPN 1120</td>
<td>Elementary Span I</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SPN 1121</td>
<td>Elementary Span II</td>
<td>3</td>
<td>SPN 1120</td>
<td></td>
</tr>
<tr>
<td>HUE 1999</td>
<td>Selected Topics in Humanities</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td><strong>Social Sciences – 3 credit hours</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECO2013</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>PSY 2012</td>
<td>Introduction to Psychology</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SYG 2000</td>
<td>Introduction to Sociology</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>WOH 2012</td>
<td>World Civilization I</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SSE 1999</td>
<td>Selected Topics in Social Sciences</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td><strong>Ethics – 3 credit hours</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ETH 2020</td>
<td>Ethics for Engineers</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mathematics and Sciences – 23 credit hours</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAT 2000</td>
<td>Calculus I</td>
<td>4</td>
<td>Placement Test or Remedial Course</td>
<td></td>
</tr>
<tr>
<td>MAT 2650</td>
<td>Calculus II</td>
<td>4</td>
<td>MAT 2000</td>
<td></td>
</tr>
<tr>
<td>MAT 3100</td>
<td>Differential Equations</td>
<td>3</td>
<td>MAT 2650</td>
<td></td>
</tr>
<tr>
<td>PHY 2048</td>
<td>Physics I</td>
<td>4</td>
<td>MAT 2000</td>
<td></td>
</tr>
<tr>
<td>PHY 2049</td>
<td>Physics II</td>
<td>4</td>
<td>PHY 2048</td>
<td></td>
</tr>
<tr>
<td>CHM 1045</td>
<td>Chemistry for Engineers</td>
<td>4</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>
### CIVIL ENGINEERING CORE – 40 credit hours

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGI 1110</td>
<td>Engineering Graphics</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>ENGI 1130</td>
<td>Freshman Engineering Design</td>
<td>3</td>
<td>ENGI 1110</td>
<td></td>
</tr>
<tr>
<td>ENGI 1140</td>
<td>Earth Sciences</td>
<td>3</td>
<td>CHM 1045</td>
<td></td>
</tr>
<tr>
<td>ENGI 2110</td>
<td>Mechanics – Statics</td>
<td>3</td>
<td>PHY 2048, MAT 2650</td>
<td></td>
</tr>
<tr>
<td>ENGI 2210</td>
<td>Probability and Statistics for Engineers</td>
<td>3</td>
<td>MAT 2000</td>
<td></td>
</tr>
<tr>
<td>ENGI 2310</td>
<td>Computer Programming and Algorithms</td>
<td>3</td>
<td>MAT 2000</td>
<td></td>
</tr>
<tr>
<td>ENGI 3110</td>
<td>Mechanics of Materials I</td>
<td>3</td>
<td>ENGI 2110</td>
<td></td>
</tr>
<tr>
<td>ENGI 3120</td>
<td>Mechanics of Materials II</td>
<td>3</td>
<td>ENGI 3110, CE 3004</td>
<td></td>
</tr>
<tr>
<td>ENGI 3410</td>
<td>Mechanics – Dynamics</td>
<td>3</td>
<td>ENGI 2110</td>
<td></td>
</tr>
<tr>
<td>ENGI 3420</td>
<td>Fluid Mechanics</td>
<td>3</td>
<td>MAT 3100, ENGI 3410</td>
<td></td>
</tr>
<tr>
<td>ENGI 4210</td>
<td>Engineering Economics</td>
<td>3</td>
<td>MAT 2000</td>
<td></td>
</tr>
<tr>
<td>SURV 2091</td>
<td>Surveying Instruments Laboratory for Engineers</td>
<td>1</td>
<td>ENGI 2210, ENGI 1140</td>
<td></td>
</tr>
<tr>
<td>CE 3004</td>
<td>Applied Numerical Analysis</td>
<td>3</td>
<td>ENGI 2210, ENGI 2310, MAT 3100</td>
<td></td>
</tr>
</tbody>
</table>

Core Elective  
(Choose one of the following courses)

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGI 3430</td>
<td>Thermodynamics</td>
<td>3</td>
<td>ENGI 3420</td>
<td></td>
</tr>
<tr>
<td>EE 3800</td>
<td>Principles of Electrical Engineering</td>
<td>3</td>
<td>PHY 2049</td>
<td></td>
</tr>
</tbody>
</table>

### CIVIL ENGINEERING ACADEMIC TRACK – 47 credit hours

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 3402</td>
<td>Water Resources and Hydraulic Engineering</td>
<td>3</td>
<td>ENGI 3420, CE 3004</td>
<td></td>
</tr>
<tr>
<td>CE 3502</td>
<td>Construction Materials</td>
<td>3</td>
<td>ENGI 2210, ENGI 3110</td>
<td></td>
</tr>
<tr>
<td>CE 3503</td>
<td>Construction Materials Laboratory</td>
<td>1</td>
<td>ENGI 2210, ENGI 3110</td>
<td>CE 3502</td>
</tr>
<tr>
<td>CE 4102</td>
<td>Theory of Structures I</td>
<td>3</td>
<td>ENGI 3120</td>
<td></td>
</tr>
<tr>
<td>CE 4104</td>
<td>Theory of Structures II</td>
<td>3</td>
<td>CE 4102</td>
<td></td>
</tr>
<tr>
<td>CE 4202</td>
<td>Geotechnical Engineering I</td>
<td>3</td>
<td>ENGI 1140, ENGI 3110, ENGI 3420, CE 3004</td>
<td></td>
</tr>
<tr>
<td>CE 4204</td>
<td>Geotechnical Engineering II</td>
<td>3</td>
<td>CE 4202, ENGI 3120</td>
<td></td>
</tr>
<tr>
<td>CE 4207</td>
<td>Geotechnical Engineering Laboratory</td>
<td>1</td>
<td>CE 4202, ENGI 3120</td>
<td>CE 4204</td>
</tr>
<tr>
<td>CE 4302</td>
<td>Highway and Transportation Engineering I</td>
<td>3</td>
<td>SURV 2091, CE 3004</td>
<td></td>
</tr>
<tr>
<td>CE 4304</td>
<td>Highway and Transportation Engineering II</td>
<td>3</td>
<td>CE 4302, CE 4202</td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
<td>Associated Courses</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
<td>-------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>CE 4402</td>
<td>Water Supply Engineering</td>
<td>3</td>
<td>CE 3502</td>
<td></td>
</tr>
<tr>
<td>CE 5404</td>
<td>Environmental Engineering</td>
<td>3</td>
<td>CE 4402</td>
<td></td>
</tr>
<tr>
<td>CE 4502</td>
<td>Construction Project Management</td>
<td>3</td>
<td>CE 3502\footnote{ENGI 4210, ETH 2020}</td>
<td></td>
</tr>
<tr>
<td>CE 4900</td>
<td>Civil Engineering Senior Design Project</td>
<td>3</td>
<td>CE 4104\footnote{CE 4204, CE 4304, CE 5404, CE 4502}</td>
<td></td>
</tr>
</tbody>
</table>

**Technical Electives – 9 credit hours**

(Choose three of the following courses)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Associated Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 4106</td>
<td>Steel Structures Design</td>
<td>3</td>
<td>CE 3502\footnote{CE 4102}</td>
</tr>
<tr>
<td>CE 4108</td>
<td>Concrete Structures Design</td>
<td>3</td>
<td>CE 3502\footnote{CE 4104}</td>
</tr>
<tr>
<td>CE 4306</td>
<td>Highway and Transportation Engineering III</td>
<td>3</td>
<td>CE 4304</td>
</tr>
<tr>
<td>CE 5104</td>
<td>Foundation Engineering</td>
<td>3</td>
<td>CE 4106\footnote{CE 4108, CE 4204, CE 4207}</td>
</tr>
<tr>
<td>CE 5402</td>
<td>Wastewater Engineering</td>
<td>3</td>
<td>CE 4402</td>
</tr>
<tr>
<td>CE 5510</td>
<td>Construction Planning, Scheduling, and Cost Estimates</td>
<td>3</td>
<td>CE 4502</td>
</tr>
<tr>
<td>CE 5512</td>
<td>Construction Methods and Productivity Improvement</td>
<td>3</td>
<td>CE 4502</td>
</tr>
<tr>
<td>CE 5002</td>
<td>Civil Engineering Practice</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CE 5004</td>
<td>Advanced AutoCAD for Civil Engineering</td>
<td>3</td>
<td>ENGI 1110</td>
</tr>
<tr>
<td>CE 5102</td>
<td>Advanced Reinforced Concrete Design</td>
<td>3</td>
<td>CE 4108</td>
</tr>
<tr>
<td>CE 5106</td>
<td>Matrix Computer Analysis of Structures</td>
<td>3</td>
<td>CE 4104</td>
</tr>
<tr>
<td>CE 5108</td>
<td>Prestressed Concrete Structures Design</td>
<td>3</td>
<td>CE 4108</td>
</tr>
<tr>
<td>CE 5110</td>
<td>Earthquake Engineering</td>
<td>3</td>
<td>CE 4108</td>
</tr>
<tr>
<td>CE 5112</td>
<td>Bridge Design</td>
<td>3</td>
<td>CE 4108</td>
</tr>
<tr>
<td>CE 5114</td>
<td>Computer Analysis and Design of Structural Systems</td>
<td>3</td>
<td>CE 4108</td>
</tr>
<tr>
<td>CE 5116</td>
<td>Design of Wood Structures</td>
<td>3</td>
<td>CE 4104</td>
</tr>
<tr>
<td>CE 5118</td>
<td>Construction Documents for Civil Engineering</td>
<td>3</td>
<td>CE 4106\footnote{CE 4108}</td>
</tr>
<tr>
<td>CE 5202</td>
<td>Geotechnical Engineering III</td>
<td>3</td>
<td>CE 4204\footnote{CE 4207}</td>
</tr>
<tr>
<td>CE 5204</td>
<td>Design with Geosynthetics</td>
<td>3</td>
<td>CE 4204\footnote{CE 4207}</td>
</tr>
<tr>
<td>CE 5206</td>
<td>Special Topics in Geotechnical Engineering</td>
<td>3</td>
<td>CE 4204\footnote{CE 4207}</td>
</tr>
<tr>
<td>CE 5208</td>
<td>Soil Improvement</td>
<td>3</td>
<td>CE 4204</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
<td>Co-requisites</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------------------------------------</td>
<td>---------</td>
<td>---------------</td>
</tr>
<tr>
<td>CE 5210</td>
<td>Software Applications in Geotechnical Engineering</td>
<td>3</td>
<td>CE 4204, CE 4207</td>
</tr>
<tr>
<td>CE 5302</td>
<td>Pavement Design</td>
<td>3</td>
<td>CE 4204, CE 4304</td>
</tr>
<tr>
<td>CE 5304</td>
<td>Traffic Engineering</td>
<td>3</td>
<td>CE 4306</td>
</tr>
<tr>
<td>CE 5306</td>
<td>Advanced Traffic Engineering</td>
<td>3</td>
<td>CE 5304</td>
</tr>
<tr>
<td>CE 5308</td>
<td>Urban Transportation Planning</td>
<td>3</td>
<td>CE 4306</td>
</tr>
<tr>
<td>CE 5310</td>
<td>Computer Aided Design in Transportation and Highway Engineering</td>
<td>3</td>
<td>CE 4306</td>
</tr>
<tr>
<td>CE 5406</td>
<td>Open Channel Engineering</td>
<td>3</td>
<td>CE 3402</td>
</tr>
<tr>
<td>CE 5408</td>
<td>Computer Aided Design in Hydraulic and Environmental Engineering</td>
<td>3</td>
<td>CE 4402</td>
</tr>
<tr>
<td>CE 5412</td>
<td>Applied Surface Water Hydrology</td>
<td>3</td>
<td>CE 3402</td>
</tr>
<tr>
<td>CE 5514</td>
<td>Legal Aspects in Engineering Practice</td>
<td>3</td>
<td>CE 4502</td>
</tr>
<tr>
<td>CE 5516</td>
<td>Construction Project Administration</td>
<td>3</td>
<td>CE 4502</td>
</tr>
<tr>
<td>CE 5518</td>
<td>Managing for Quality in Construction</td>
<td>3</td>
<td>CE 4502</td>
</tr>
<tr>
<td>CE 5520</td>
<td>Computer Applications in Construction</td>
<td>3</td>
<td>CE 4502</td>
</tr>
</tbody>
</table>
BS IN CIVIL ENGINEERING FLOW CHART

General Education Requirements (41 Credits)
- ENC1101 English Composition I (3)
- ENC1102 English Composition II (3)
- SPC 1026 Speech Communication Fundamentals (3)
- Elective course in Humanities (3)
- ETH 2020 Ethics for Engineers (3)
- MAT 2000 Calculus I (4)
- MAT 2650 Calculus II (4)
- MAT 3100 Differential Equations (3)
- PHY 2048 Physics I (4)
- PHY 2049 Physics II (4)
- CHM 1045 Chemistry for Engineers (4)

CE Core (40 Credits)
- ENGI 1110 Engineering Graphics (3)
- ENGI 1130 Freshman Engineering Design (3)
- ENGI 1140 Earth Sciences (3)
- ENGI 2110 Mechanics – Static (3)
- ENGI 2210 Probability and Statistics for Engineers (3)
- ENGI 2310 Computer Programming and Algorithms (3)
- ENGI 3110 Mechanics of Materials I (3)
- ENGI 3120 Mechanics of Materials II (3)
- ENGI 3410 Mechanics – Dynamics (3)
- ENGI 3420 Fluid Mechanics (3)
- ENGI 4210 Engineering Economics (3)
- SURV 2091 Surveying Instruments Laboratory for Engineers (1)
- Core Elective (3)

Technical Electives (9 Credits)
- CE 4106 Steel Structures Design
- CE 4306 Highway and Transportation Engineering III
- CE 5042 Wastewater Engineering
- CE 5512 Construction Methods and Productivity Improvement
- CE 5004 Advanced AutoCAD for Civil Engineering
- CE 5106 Matrix Computer Analysis of Structures
- CE 5110 Earthquake Engineering
- CE 5114 Computer Analysis and Design of Structural Systems
- CE 5118 Construction Documents for Civil Engineering
- CE 5204 Design with Geosynthetics
- CE 5302 Pavement Design
- CE 5306 Advanced Traffic Engineering
- CE 5406 Open Channel Engineering
- CE 5514 Legal Aspects in Engineering Practice
- CE 5518 Managing for Quality in Construction
- CE 5408 Computer Aided Design in Hydraulic and Environmental Engineering
- CE 5310 Computer Aided Design in Transportation and Highway Engineering

Elective Course in Humanities (3 Credits)
- ARH 1000 Art Appreciation
- HUM 1020 Humanities
- LIT 2411 Literature and Culture Issues
- MUL 1010 Music Appreciation
- SPN 1120 Elementary Span I
- SPN 1121 Elementary Span II
- HUE 1999 Selected Topics in Humanities

Elective Social Science (3 Credits)
- ECO 2013 Principles of Macroeconomics
- PSY 2012 Introduction to Psychology
- SYG 2000 Introduction to Sociology
- WOH 2012 World Civilization I
- SSE 1999 Selected Topics in Social Sciences

CE Academic Track (47 Credits)
- CE 3402 Water Resources and Hydraulic Engineering (3)
- CE 3502 Construction Materials (3)
- CE 3503 Construction Materials Laboratory (1)
- CE 4102 Theory of Structures I (3)
- CE 4104 Theory of Structures II (3)
- CE 4202 Geotechnical Engineering I (3)
- CE 4204 Geotechnical Engineering II (3)
- CE 4207 Geotechnical Engineering Laboratory (1)
- CE 4302 Highway and Transportation Engineering I (3)
- CE 4304 Highway and Transportation Engineering II (3)
- CE 4402 Water Supply Engineering (3)
- CE 5404 Environmental Engineering (3)
- CE 4502 Construction Project Management (3)
- CE 4900 Civil Engineering Senior Design Project (3)
- Technical Electives in Civil Engineering (9)

Core Elective (3 Credits)
- ENGI 3430 Thermodynamics
- EE 3800 Principles of Electrical Engineering

Polytechnic University of PR-Orlando Campus Catalog 2011-2012 65
BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING (BSEE)

The student must complete the following minimum requirements to earn the Bachelor of Science in Electrical Engineering degree:

GENERAL EDUCATION COURSES – 41 credit hours

BSEE CORE COURSES – 62 credit hours

BSEE ACADEMIC TRACK COURSES – 26 credit hours (Electronics Option)
27 credit hours (Power Option)

(This program may use Dual Courses to complete the curriculum)

BSEE PROGRAM

<table>
<thead>
<tr>
<th>REQUIRED CREDIT-HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
</tr>
<tr>
<td>EE Core</td>
</tr>
<tr>
<td>Academic Track</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

*Electronics Option
**Power Option

GENERAL EDUCATION – 41 credit hours

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC1101</td>
<td>English Composition I</td>
<td>3</td>
<td>Placement Test or Remedial Course</td>
<td></td>
</tr>
<tr>
<td>ENC1102</td>
<td>English Composition II</td>
<td>3</td>
<td>ENC 1101</td>
<td></td>
</tr>
<tr>
<td>SPC 1026</td>
<td>Speech Communication Fundamentals</td>
<td>3</td>
<td>ENC 1101</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elective course in Humanities</td>
<td></td>
<td>(Choose one of the following courses)</td>
<td></td>
</tr>
<tr>
<td>ARH 1000</td>
<td>Art Appreciation</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>HUM 1020</td>
<td>Humanities</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>LIT 2411</td>
<td>Literature and Culture Issues</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>MUL 1010</td>
<td>Music Appreciation</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SPN 1120</td>
<td>Elementary Span I</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SPN 1121</td>
<td>Elementary Span II</td>
<td>3</td>
<td>SPN 1120</td>
<td></td>
</tr>
<tr>
<td>HUE 1999</td>
<td>Selected Topics in Humanities</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elective course in Social Sciences</td>
<td></td>
<td>(Choose one of the following courses)</td>
<td></td>
</tr>
<tr>
<td>ECO 2013</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>PSY 2012</td>
<td>Introduction to Psychology</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SYG 2000</td>
<td>Introduction to Sociology</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>WOH 2012</td>
<td>World Civilization I</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SSE 1999</td>
<td>Selected Topics in Social</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>
**Ethics – 3 credit hours**

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETH 2020</td>
<td>Ethics for Engineers</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Mathematics and Sciences – 23 credit hours**

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT 2000</td>
<td>Calculus I</td>
<td>4</td>
<td>Placement Test or Remedial Course</td>
<td></td>
</tr>
<tr>
<td>MAT 2650</td>
<td>Calculus II</td>
<td>4</td>
<td>MAT 2000</td>
<td></td>
</tr>
<tr>
<td>MAT 3100</td>
<td>Differential Equations</td>
<td>3</td>
<td>MAT 2650</td>
<td></td>
</tr>
<tr>
<td>PHY 2048</td>
<td>Physics I</td>
<td>4</td>
<td>MAT 2000</td>
<td></td>
</tr>
<tr>
<td>PHY 2049</td>
<td>Physics II</td>
<td>4</td>
<td>PHY 2048</td>
<td>MAT 2650</td>
</tr>
<tr>
<td>CHM 1045</td>
<td>Chemistry for Engineers</td>
<td>4</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

**ELECTRONICS/POWER CORE – 62 credit hours**

**ELECTRICAL POWER CONCENTRATION WAIVER OF EE 3520 (ELECTRONICS II) CREDITS FOR EE4600**

The same is to certify that the Electrical Power students no longer have to take Electronics II EE 3520 as pre-requirement for Automatic Controls EE 4600. Effective September 20, 2006.
<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>COE 3301</td>
<td>Logic Circuits Laboratory</td>
<td>0</td>
<td>CECS 2203</td>
<td>COE 3300</td>
</tr>
<tr>
<td>EE 3012</td>
<td>Num. Analysis for Electrical Eng.</td>
<td>3</td>
<td>CECS 2202</td>
<td>EE 3000</td>
</tr>
<tr>
<td>EE 4000</td>
<td>Signals and Systems</td>
<td>3</td>
<td>EE 3020</td>
<td></td>
</tr>
<tr>
<td>EE 4600</td>
<td>Automatic Controls</td>
<td>3</td>
<td>EE 4000</td>
<td>EE 3520 Waived for Electronic</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Power Concentration</td>
</tr>
<tr>
<td>COE 3320</td>
<td>Microprocessors</td>
<td>3</td>
<td>COE 3300</td>
<td>COE 3321</td>
</tr>
<tr>
<td>COE 3321</td>
<td>Microprocessors Laboratory</td>
<td>1</td>
<td>COE 3301</td>
<td>COE 3320</td>
</tr>
</tbody>
</table>

**ELECTRONICS ACADEMIC TRACK – 20 credit hours**

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 3520</td>
<td>Electronics II</td>
<td>3</td>
<td>EE 3020</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE 3500</td>
<td></td>
</tr>
<tr>
<td>EE 3521</td>
<td>Electronics Laboratory</td>
<td>1</td>
<td>EE 3001</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE 3520</td>
<td></td>
</tr>
<tr>
<td>EE 4704</td>
<td>Analog Communication Systems</td>
<td>3</td>
<td>ENGI 2210</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE 4000</td>
<td></td>
</tr>
<tr>
<td>EE 4710</td>
<td>Random Processes</td>
<td>3</td>
<td>ENGI 2210</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE 4000</td>
<td></td>
</tr>
<tr>
<td>EE 5600</td>
<td>Process Control and Instrumentation</td>
<td>3</td>
<td>ENGI 3420</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE 4600</td>
<td></td>
</tr>
<tr>
<td>EE 5601</td>
<td>Process Control and Instr. Lab.</td>
<td>1</td>
<td>EE 5600</td>
<td></td>
</tr>
<tr>
<td>EE 5714</td>
<td>Digital Communication Systems</td>
<td>3</td>
<td>EE 4704</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE 4710</td>
<td></td>
</tr>
<tr>
<td>EE 4906</td>
<td>Electronics Senior Design Project</td>
<td>3</td>
<td>EE 5601</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE 5714</td>
<td></td>
</tr>
</tbody>
</table>

**POWER ACADEMIC TRACK – 21 credit hours**

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 3410</td>
<td>Elect. Mech. Energy Conversion II</td>
<td>3</td>
<td>EE3400</td>
<td></td>
</tr>
<tr>
<td>EE 3411</td>
<td>Elect. Mech. En. Conversion II Lab.</td>
<td>1</td>
<td>EE 3401</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE 3410</td>
<td></td>
</tr>
<tr>
<td>EE 3420</td>
<td>Power System Analysis I</td>
<td>3</td>
<td>EE 3400</td>
<td></td>
</tr>
<tr>
<td>EE 4400</td>
<td>Power System Analysis II</td>
<td>3</td>
<td>EE3420</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE 3411</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE 4401</td>
<td></td>
</tr>
<tr>
<td>EE 4401</td>
<td>Power System Analysis Laboratory</td>
<td>1</td>
<td>EE 3420</td>
<td></td>
</tr>
<tr>
<td>EE 4440</td>
<td>Electric System Design</td>
<td>3</td>
<td>EE 3020</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>EE 3400</td>
<td></td>
</tr>
<tr>
<td>EE 5430</td>
<td>Power System Protection</td>
<td>3</td>
<td>EE 4400</td>
<td></td>
</tr>
<tr>
<td>EE 5431</td>
<td>Power System Protection Laboratory</td>
<td>1</td>
<td>EE 5430</td>
<td></td>
</tr>
<tr>
<td>EE 4908</td>
<td>Power Senior Design Project</td>
<td>3</td>
<td>EE 5431</td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>Title</td>
<td>Credits</td>
<td>Co-Requisites</td>
<td>Course</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------------------------</td>
<td>---------</td>
<td>-------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>EE 4610</td>
<td>Automation Engineering</td>
<td>3</td>
<td>COE 3300, COE 3301</td>
<td>EE 4611</td>
</tr>
<tr>
<td>EE 4611</td>
<td>Automation Engineering Laboratory</td>
<td>1</td>
<td>COE 3300, COE 3301</td>
<td>EE 4610</td>
</tr>
<tr>
<td>EE 5630</td>
<td>Robotic Engineering Design</td>
<td>4</td>
<td>EE 4600, EE 4610</td>
<td>EE 5631</td>
</tr>
<tr>
<td>EE 5631</td>
<td>Robotic Engineering Design Lab.</td>
<td>0</td>
<td>EE 4611</td>
<td>EE 5630</td>
</tr>
<tr>
<td>EE 5720</td>
<td>Digital Signal Processing</td>
<td>3</td>
<td>ENGI 2210, EE 4000</td>
<td></td>
</tr>
<tr>
<td>EE 5723</td>
<td>DSP Fundamentals Laboratory</td>
<td>1</td>
<td>EE 5720</td>
<td></td>
</tr>
<tr>
<td>EE 5500</td>
<td>Power Electronics</td>
<td>3</td>
<td>EE 4600</td>
<td>EE 5501</td>
</tr>
<tr>
<td>EE 5501</td>
<td>Power Electronics Laboratory</td>
<td>1</td>
<td>EE 3521</td>
<td>EE 5500</td>
</tr>
<tr>
<td>EE 4500</td>
<td>Electronics III</td>
<td>3</td>
<td>EE 3520, EE 4000</td>
<td></td>
</tr>
<tr>
<td>COE 5340</td>
<td>Microcomputer Interfacing</td>
<td>4</td>
<td>COE 3320, COE 3321</td>
<td>COE 5341</td>
</tr>
<tr>
<td>COE 5341</td>
<td>Microcomputer Interfacing Lab.</td>
<td>0</td>
<td>COE 3321</td>
<td>COE 5340</td>
</tr>
<tr>
<td>EE 3220</td>
<td>Software Applications for EE</td>
<td>3</td>
<td>CECS 2202</td>
<td></td>
</tr>
<tr>
<td>EE 5444</td>
<td>Advanced Electric System Design</td>
<td>3</td>
<td>EE 3420, EE 4440</td>
<td></td>
</tr>
<tr>
<td>EE 5464</td>
<td>Generation Control Systems</td>
<td>3</td>
<td>EE 4400</td>
<td></td>
</tr>
<tr>
<td>EE 5710</td>
<td>Microwave and Satellite Comm.</td>
<td>3</td>
<td>EE 3030, EE 5714</td>
<td></td>
</tr>
<tr>
<td>EE 5436</td>
<td>Distribution System Design</td>
<td>3</td>
<td>EE 4400</td>
<td></td>
</tr>
</tbody>
</table>
BS IN ELECTRICAL ENGINEERING FLOW CHART

Elective Course in Humanities (3 Credits)
- ARH 1000 Art Appreciation
- HUM 1020 Humanities
- LIT 2411 Literature and Culture Issues
- MUL 1010 Music Appreciation
- SPN 1120 Elementary Span I
- SPN 1121 Elementary Span II
- HUE 1999 Selected Topics in Humanities

General Education Requirements (41 Credits)
- ENCI101 English Composition I (3)
- ENCI102 English Composition II (3)
- SPC 1026 Speech Communication Fundamentals (3)
- Elective course in Humanities (3)
- Elective course in Social Sciences (3)
- ETH 2020 Ethics for Engineers (3)
- MAT 2000 Calculus I (4)
- MAT 2650 Calculus II (4)
- MAT 3100 Differential Equations (3)
- PHY 2048 Physics I (4)
- PHY 2049 Physics II (4)
- CHM 1045 Chemistry for Engineers (4)

Elective Social Science (2 Credits)
- ECO 2013 Principles of Microeconomics
- PSY 2012 Introduction to Psychology
- SYG 2000 Introduction to Sociology
- WOH 2012 World Civilization I
- SSE 1999 Selected Topics in Social Sciences

EE Core (62 Credits)
- ENGI 1110 Engineering Graphics (3)
- ENGI 2310 Computer Programming and Algorithms (3)
- CECS 2203 Computer Programming I Laboratory (0)
- ENGI 2210 Probability and Statistics for Engineers (3)
- EE 3030 Electromagnetic Theory (3)
- EE 3500 Electronics I (3)
- ENGI 3420 Fluid Mechanics (3)
- ENGI 4210 Engineering Economics (3)
- EE 4301 Logic Circuits Laboratory (0)
- EE 4000 Signals and Systems(3)
- EE 3320 Microprocessors (3)
- ENGI 1130 Freshman Engineering Design (3)
- CECS 2202 Computer Programming I (4)
- ENGI 2110 Mechanics, Statics (3)
- EE 3000 Circuit Analysis I (3)
- EE 3001 Electrical Measurements Laboratory (1)
- ENGI 3410 Mechanics – Dynamics (3)
- EE 3020 Circuit Analysis II (3)
- COE 3300 Logic Circuits(4)
- EE 3012 Numerical Analysis for Electrical Eng. (3)
- EE 4600 Automatic Controls (3)
- COE 3321 Microprocessors Laboratory (1)

Electronics Academic Track (26 Credits)
- EE 3520 Electronics II (3)
- EE 3521 Electronics Laboratory (1)
- EE 4704 Analog Communication Systems (3)
- EE 4710 Random Processes (3)
- EE 5600 Process Control and Instrumentation (3)
- EE 5601 Process Control and Instr. Lab (1)
- EE 5714 Digital Communication Systems (3)
- EE 4906 Electronics Senior Design Project (3)
- Technical Elective (6)

Power Academic Track (27 Credits)
- EE 3410 Elec. Mech. Energy Conversion II (3)
- EE 3420 Power System Analysis I (3)
- EE 4400 Power System Analysis II (3)
- EE 4401 Power System Analysis Lab (1)
- EE 4440 Electric System Design (3)
- EE 5430 Power System Protection (3)
- EE 5431 Power System Protection Lab. (1)
- EE 4908 Power Senior Design Project (3)
- Technical Elective (6)

Technical Electives (6 Credits)
- EE 4610 Automation Engineering (3)
- EE 5630 Robotic Engineering Design (4)
- EE 5720 Digital Signal Processing (3)
- EE 5500 Power Electronics (3)
- EE 4500 Electronics III (3)
- COE 5341 Microcomputer Interfacing Lab. (0)
- EE 5444 Advanced Electric System Design (3)
- EE 5710 Microwave and Satellite Comm. (3)
- COE 5340 Microcomputer Interfacing (4)
- EE 3220 Software Applications for EE (3)
- EE 5464 Generation Control Systems (3)
- EE 5436 Distribution System Design (3)
BACHELOR OF SCIENCE IN COMPUTER ENGINEERING (BSCoE)

The student must complete the following minimum requirements to earn the Bachelor of Science in Computer Engineering degree:

GENERAL EDUCATION COURSES – 41 credit hours

BSCoE CORE COURSES – 40 credit hours

BSCoE ACADEMIC TRACK COURSES – 49 credit hours

(This program may use Dual Courses to complete the curriculum)

BSCoE PROGRAM

<table>
<thead>
<tr>
<th>REQUIRED CREDIT-HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
</tr>
<tr>
<td>BSCoE Core</td>
</tr>
<tr>
<td>Academic Track</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

GENERAL EDUCATION – 41 credit hours

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities – 12 credit hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENC 1101</td>
<td>English Composition I</td>
<td>3</td>
<td>Placement Test or Remedial Course</td>
<td></td>
</tr>
<tr>
<td>ENC 1102</td>
<td>English Composition II</td>
<td>3</td>
<td>ENC 1101</td>
<td></td>
</tr>
<tr>
<td>SPC 1026</td>
<td>Speech Communication Fundamentals</td>
<td>3</td>
<td>ENC 1101</td>
<td></td>
</tr>
<tr>
<td>Elective course in Humanities</td>
<td>(Choose one of the following courses)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARH 1000</td>
<td>Art Appreciation</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>HUM 1020</td>
<td>Humanities</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>LIT 2411</td>
<td>Literature and Culture Issues</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>MUL 1010</td>
<td>Music Appreciation</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SPN 1120</td>
<td>Elementary Span I</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SPN 1121</td>
<td>Elementary Span II</td>
<td>3</td>
<td>SPN 1120</td>
<td></td>
</tr>
<tr>
<td>HUE 1999</td>
<td>Selected Topics in Humanities</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Social Sciences – 3 credit hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elective course in Social Sciences</td>
<td>(Choose one of the following courses)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECO 2013</td>
<td>Principles of Macroeconomics</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>PSY 2012</td>
<td>Introduction to Psychology</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SYG 2000</td>
<td>Introduction to Sociology</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>WOH 2012</td>
<td>World Civilization I</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SSE 1999</td>
<td>Selected Topics in Social Sciences</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Ethics – 3 credit hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ETH 2020</td>
<td>Ethics for Engineers</td>
<td>3</td>
<td>Elective course in</td>
<td></td>
</tr>
</tbody>
</table>
### Mathematics and Sciences – 23 credit hours

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT 2000</td>
<td>Calculus I</td>
<td>4</td>
<td>Placement Test or Remedial Course</td>
<td></td>
</tr>
<tr>
<td>MAT 2650</td>
<td>Calculus II</td>
<td>4</td>
<td>MAT 2000</td>
<td></td>
</tr>
<tr>
<td>MAT 3100</td>
<td>Differential Equations</td>
<td>3</td>
<td>MAT 2650</td>
<td></td>
</tr>
<tr>
<td>PHY 2048</td>
<td>Physics I</td>
<td>4</td>
<td>MAT 2000</td>
<td></td>
</tr>
<tr>
<td>PHY 2049</td>
<td>Physics II</td>
<td>4</td>
<td>PHY 2048</td>
<td>MAT 2650</td>
</tr>
<tr>
<td>CHM 1045</td>
<td>Chemistry for Engineers</td>
<td>4</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

### COMPUTER ENGINEERING CORE – 40 credit hours

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGI 1110</td>
<td>Engineering Graphics</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>ENGI 1130</td>
<td>Freshman Engineering Design</td>
<td>3</td>
<td>ENGI 1110</td>
<td></td>
</tr>
<tr>
<td>ENGI 2310</td>
<td>Comp. Prog. And Algorithms</td>
<td>3</td>
<td>MAT 2000</td>
<td></td>
</tr>
<tr>
<td>CECS 2202</td>
<td>Computer Programming I</td>
<td>4</td>
<td>MAT 2650</td>
<td>ENGI 2310</td>
</tr>
<tr>
<td>CECS 2203</td>
<td>Computer Programming I Laboratory</td>
<td>0</td>
<td>MAT 2650</td>
<td>ENGI 2310</td>
</tr>
<tr>
<td>ENGI 3499</td>
<td>Mechanics Statics and Dynamics</td>
<td>3</td>
<td>PHY 2048</td>
<td>MAT 2650</td>
</tr>
<tr>
<td>ENGI 2210</td>
<td>Prob. and Statistics for Engineers</td>
<td>3</td>
<td>MAT 2000</td>
<td></td>
</tr>
<tr>
<td>EE 3000</td>
<td>Circuit Analysis I</td>
<td>3</td>
<td>MAT 2650</td>
<td>PHY 2049</td>
</tr>
<tr>
<td>EE 3001</td>
<td>Electrical Measurement Lab</td>
<td>1</td>
<td>EE 3000</td>
<td></td>
</tr>
<tr>
<td>EE 3020</td>
<td>Circuit Analysis II</td>
<td>3</td>
<td>MAT 3100</td>
<td>EE 3000</td>
</tr>
<tr>
<td>EE 3012</td>
<td>Num. Analysis for Electrical Eng.</td>
<td>3</td>
<td>CECS 2202</td>
<td>EE 3000</td>
</tr>
<tr>
<td>ENGI 4210</td>
<td>Engineering Economics</td>
<td>3</td>
<td>MAT 2000</td>
<td></td>
</tr>
<tr>
<td>COE 3300</td>
<td>Logic Circuits</td>
<td>4</td>
<td>CECS 2202</td>
<td>COE 3301</td>
</tr>
<tr>
<td>COE 3301</td>
<td>Logic Circuits Laboratory</td>
<td>0</td>
<td>CECS 2203</td>
<td>COE 3300</td>
</tr>
<tr>
<td>COE 3320</td>
<td>Microprocessors</td>
<td>3</td>
<td>COE 3300</td>
<td>COE 3321</td>
</tr>
<tr>
<td>COE 3321</td>
<td>Microprocessors Laboratory</td>
<td>1</td>
<td>COE 3301</td>
<td>COE 3320</td>
</tr>
</tbody>
</table>

### COMPUTER ENGINEERING ACADEMIC TRACK – 49 credit hours

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>CREDIT-HOURS</th>
<th>PRE-REQUISITE</th>
<th>CO-REQUISITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CECS 2004</td>
<td>Discrete Structures</td>
<td>3</td>
<td>MAT 2650</td>
<td></td>
</tr>
<tr>
<td>CECS 2222</td>
<td>Computer Programming II</td>
<td>4</td>
<td>MAT 2650</td>
<td>CECS 2202</td>
</tr>
<tr>
<td>CECS 2223</td>
<td>Computer Programming II Lab</td>
<td>0</td>
<td>MAT 2650</td>
<td>CECS 2202</td>
</tr>
<tr>
<td>CECS 3212</td>
<td>Data Structures</td>
<td>3</td>
<td>CECS 2222</td>
<td></td>
</tr>
<tr>
<td>CECS 3210</td>
<td>Advanced Programming</td>
<td>3</td>
<td>CECS 2222</td>
<td></td>
</tr>
<tr>
<td>CECS 3302</td>
<td>Data Communication</td>
<td>3</td>
<td>COE 3300</td>
<td></td>
</tr>
<tr>
<td>CECS 4202</td>
<td>Database Systems</td>
<td>3</td>
<td>CECS 3212</td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>Title</td>
<td>CR-HRS</td>
<td>Pre-Req</td>
<td>Co-Req</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------</td>
<td>--------</td>
<td>------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>CECS 4204</td>
<td>Software Engineering</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COE 5340</td>
<td>Microcomputer Interfacing</td>
<td>3</td>
<td></td>
<td>CECS 4202</td>
</tr>
<tr>
<td>COE 5341</td>
<td>Microcomputer Interfacing Lab.</td>
<td>1</td>
<td></td>
<td>COE 5340</td>
</tr>
<tr>
<td>COE 5330</td>
<td>Computer Networks</td>
<td>3</td>
<td></td>
<td>CECS 3302</td>
</tr>
<tr>
<td>COE 5331</td>
<td>Computer Networks Lab</td>
<td>1</td>
<td></td>
<td>COE 5330</td>
</tr>
<tr>
<td>COE 5320</td>
<td>Computer Architecture</td>
<td>3</td>
<td></td>
<td>COE 3320</td>
</tr>
<tr>
<td>COE 5321</td>
<td>Computer Architecture Lab.</td>
<td>1</td>
<td></td>
<td>COE 5320</td>
</tr>
<tr>
<td>COE 4899</td>
<td>Information Assurance</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COE 4906</td>
<td>Comp. Eng. Design Project</td>
<td>3</td>
<td>Fourth year</td>
<td></td>
</tr>
<tr>
<td>MGMT 4650</td>
<td>Entrepreneurship</td>
<td>3</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>TECHNICAL ELECTIVES</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**BACHELOR OF SCIENCE IN COMPUTER SCIENCE**

The student must complete the following minimum requirements to earn the Bachelor of Science in Computer Science (BSCS) degree:

**GENERAL EDUCATION COURSES** – 30 credit hours

12 credit hours in Humanities
   (6 credit hours must include English Composition I and II)
9 credit hours in Social Sciences
9 credit hours in Mathematics/Sciences
   (3 credit hours must include College Algebra)

**COMPUTER SCIENCE FOUNDATION COURSES** – 12 credit hours

**BSCS ELECTIVES** – 18 credit hours

**CORE COURSES** – 25 credit hours

**BSCS ACADEMIC TRACK** – 38 credit hours

(This program may use Dual Courses to complete the curriculum)

**BSCS ACADEMIC DEGREE – TOTAL HOURS = 123 credit hours**

**BSCS GENERAL EDUCATION COURSES (30 Credit Hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>CR-HRS</th>
<th>Pre-Req</th>
<th>Co-Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC 1101</td>
<td>English Composition I</td>
<td>3</td>
<td>Placement Test or Remedial Course</td>
<td></td>
</tr>
<tr>
<td>ENC 1102</td>
<td>English Composition II</td>
<td>3</td>
<td>ENC 1101</td>
<td></td>
</tr>
<tr>
<td>LIT 2411</td>
<td>Literature and Culture Issues</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>HUE 1999</td>
<td>Selected Topics in Humanities</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>PSY 2012</td>
<td>Introduction to Psychology</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>SYG 2000</td>
<td>Introduction to Sociology</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>Title</td>
<td>Pre-req</td>
<td>Cr-Hrs</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------------------</td>
<td>--------------------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>SSE 1999</td>
<td>Selected Topics in Social Science</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>MAC 1105</td>
<td>College Algebra</td>
<td>3</td>
<td>Placement Test or Remedial Course</td>
<td></td>
</tr>
<tr>
<td>PSC 1121</td>
<td>Physical Science</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>CGS 1100</td>
<td>Computer Science</td>
<td>3</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>30</strong></td>
<td></td>
</tr>
</tbody>
</table>

**COMPUTER SCIENCE FOUNDATION COURSES (12 Credit Hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Pre-req</th>
<th>Cr-Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAC 1147</td>
<td>Pre-Calculus/Algebra/Trigonometry</td>
<td>MAC 1105</td>
<td>3</td>
</tr>
<tr>
<td>BSC 1005</td>
<td>Introduction to Biology</td>
<td>None</td>
<td>3</td>
</tr>
<tr>
<td>CHM 1025</td>
<td>Introduction to Chemistry</td>
<td>MAC 1105</td>
<td>3</td>
</tr>
<tr>
<td>CGS 2405</td>
<td>Intermediate Programming in C Language</td>
<td>CGS 1100</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

**BSCS ELECTIVE COURSES (18 Credit Hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Pre-req</th>
<th>Cr-Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELE 1900</td>
<td>General Electives</td>
<td>None</td>
<td>18</td>
</tr>
</tbody>
</table>

**BSCS CORE COURSES (25 Credit Hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Pre-req</th>
<th>Cr-Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETH 3050</td>
<td>Ethical &amp; Legal Aspects of Computers &amp; Technology</td>
<td>None</td>
<td>3</td>
</tr>
<tr>
<td>CEC 3000</td>
<td>Object Oriented Programming I</td>
<td>MAC 1105</td>
<td>3</td>
</tr>
<tr>
<td>ETH 3020</td>
<td>Contemporary Social Problems in Engineering</td>
<td>None</td>
<td>3</td>
</tr>
<tr>
<td>MAT 2000</td>
<td>Calculus I</td>
<td>MAC 1147</td>
<td>4</td>
</tr>
<tr>
<td>CEC 3300</td>
<td>Object Oriented Programming II</td>
<td>CEC 3000</td>
<td>3</td>
</tr>
<tr>
<td>MAT 3400</td>
<td>Discrete Mathematics</td>
<td>MAT 2000</td>
<td>3</td>
</tr>
<tr>
<td>CEC 3070</td>
<td>Visual Basic Programming</td>
<td>CEC 3000</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Computer Science Elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>25</strong></td>
</tr>
</tbody>
</table>

**BSCS ACADEMIC TRACK COURSES**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Pre-req</th>
<th>Cr-Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEC 3650</td>
<td>Data Structures</td>
<td>CEC 3300 or MAT 2000</td>
<td>3</td>
</tr>
<tr>
<td>CEC 4000</td>
<td>Database Systems</td>
<td>CEC 3650</td>
<td>3</td>
</tr>
<tr>
<td>CEC 4050</td>
<td>Data Communications</td>
<td>CEC 3300</td>
<td>3</td>
</tr>
<tr>
<td>CEC 4100</td>
<td>Operating Systems</td>
<td>CEC 3300</td>
<td>3</td>
</tr>
<tr>
<td>CEC 4120</td>
<td>Assembly Programming Language</td>
<td>CEC 3300</td>
<td>3</td>
</tr>
<tr>
<td>CEC 4650</td>
<td>Software Engineering I</td>
<td>CEC 4000</td>
<td>3</td>
</tr>
<tr>
<td>CEC 4710</td>
<td>Comp. Science Sr. Project I</td>
<td>Senior</td>
<td>3</td>
</tr>
<tr>
<td>CEC 4750</td>
<td>Design and Analysis of Algorithms</td>
<td>CEC 3650</td>
<td>3</td>
</tr>
<tr>
<td>CEC 4800</td>
<td>Electronic Commerce (EC) Technology</td>
<td>CEC 3300</td>
<td>3</td>
</tr>
<tr>
<td>MAT 2650</td>
<td>Calculus II</td>
<td>MAT 2000</td>
<td>4</td>
</tr>
<tr>
<td>STA 2010</td>
<td>Probability and Statistics</td>
<td>MAC 1105</td>
<td>3</td>
</tr>
<tr>
<td>PHY 2600</td>
<td>Physics I</td>
<td>MAT 2000</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>38</strong></td>
</tr>
</tbody>
</table>
BS IN COMPUTER SCIENCE FLOW CHART

General Education Requirement
- BSCS (30 credit hours)

Computer Science Foundation
- BSCS (12 credit hours)
- Electives
- BSCS (18 credit hours)

Core Requirements
- (25 credit hours)
  - ETH 3050 — Ethical & Legal Aspects of Computers & Technology
  - CEC 3000 — Object Oriented Programming (C/C++) I
  - ETH 3020 — Contemporary Social Problems in Computer/Technology
  - MAT 2000 — Calculus I
  - CEC 3300 — Object Oriented Programming (C/C++) II
  - Computer Science Elective — 3000 level
  - MAT 3400 — Discrete Mathematics
  - CEC 3070 — Visual Basic Programming

Academic Track

Bachelor of Science
- 38 credit hours
  - CEC 3650 — Data Structures
  - CEC 4000 — Database Systems
  - CEC 4050 — Data Communications
  - CEC 4100 — Operating Systems
  - CEC 4120 — Assembly Programming Language
  - CEC 4650 — Software Engineering I
  - CEC 4710 — Computer Science Senior Project
  - CEC 4750 — Design and analysis of Algorithms
  - CEC 4800 — Electronic Commerce Technology
  - MAT 2650 — Calculus II
  - STA 2010 — Probability and Statistics
  - PHY 2600 — Physics I

Total hours of BSCS program: 123 credit hours
VIII. UNDERGRADUATE COURSES DESCRIPTION

**ACC 2001 Principles of Accounting I**
*Three credit-hours*

Pre-requisites: NONE

An introduction to the basic principles of financial accounting with emphasis on basic accounting procedures. Analysis of income statement procedures, computerized accounting applications and the accounting cycle are highlighted. Other topics include inventories, receivables, and cash.

**ACC 2011 Principles of Accounting II**
*Three credit-hours*

Pre-requisites: ACC 2001

A continuation of Accounting I this course emphasizes accounting theory and applications as they apply to the accounting cycle. Discussions also include plant assets, intangible assets, current and long-term liabilities.

**ACC 3310 Cost Accounting**
*Three credit-hours*

Pre-requisites: ACC 2001

A study of the methods and procedures of accounting in the determination of the unit cost of a product. It includes the procedures for the three main elements of the cost of the product (material, labor and overhead) using cost accumulation and standard cost. Emphasis is placed in the control of production costs.

**ACC 3320 Computer Applications in Accounting**
*Three credit-hours*

Pre-requisites: ACC 2001, CGS 1100

Installation, application and study of accounting software such as Peachtree and other popular packages in extensive use. These programs are used to analyze various accounting scenarios and prepare financial statements.

**ACC 3330 Intermediate Accounting I**
*Four credit-hours*

Pre-requisites: ACC 2011

This is the first of two courses designed to cover financial topics in depth. The course covers the development of accounting principles, preparation of financial statements, and use of time value of money.

**ACC 3340 Intermediate Accounting II**
*Four credit-hours*

Pre-requisites: ACC 3330

This course continues Intermediate Accounting I and is designed to cover additional financial topics in depth. The course covers the development of financial instruments and an introduction to the decisions and opinions of the regulatory bodies of the accounting practice.

**ACC 3360 Federal Income Taxes**
*Three credit-hours*

Pre-requisites: ACC 2011

A study of the principles and procedures used to prepare income tax returns for individuals, partnerships, and corporations.
**ACC 4310 Advanced Accounting**
*Pre-requisites: ACC 3340*
Three credit-hours
Special problems in the field of accounting. Includes partnerships, installment sales, consignments, home offices, consolidations, and non-profit organizations. It also includes topics in fund accounting.

**ACC 4320 Auditing**
*Pre-requisites: ACC 2011*
Three credit-hours
A study of the principles of auditing and their application to financial statements. Internal control systems, auditing programs, ethical principles and responsibilities of auditors are covered.

**ARH 1000 Art Appreciation**
*Pre-requisites: NONE*
Three credit-hours
A chronological survey of the visual arts from pre-history to modern day. Students’ will discover the visual arts as an important social force throughout history.

**BSC 1005 Introduction to Biology**
*Pre-requisites: NONE*
Three credit-hours
Selected principles in biological science, including the cell concept, the organization of multi-cellular systems, plants and animals as organized systems, and man in relation to his environment.

**CE 3004 Applied Numerical Analysis**
*Pre-requisites: MAT 3100, ENGI 2210, ENGI 2310*
Three credit-hours
The most commonly used numerical methods in civil engineering practice are introduced. Roots of equations, systems of linear equations, curve fitting techniques, numerical differentiation and integration, ordinary and partial differential equations. Computer applications are emphasized.

**CE 3402 Water Resources And Hydraulic Engineering**
*Pre-requisites: ENGI 3420, CE 3004*
Three credit-hours

**CE 3502 Construction Materials**
*Pre-requisites: ENGI 2210, ENGI 3110*
Three credit-hours

**CE 3503 Construction Materials Laboratory**
*Pre-requisites: ENGI 2210, ENGI 3110*
*Co-requisite: CE 3502*
One credit-hour
Laboratory techniques to determine the properties of concrete, coarse and fine aggregates, wood, and steel. Design and preparation of concrete mixes. Tests on concrete specimens.
CE 4102 Theory Of Structures I  
**Pre-requisites:** ENGI 3120  
Three credit-hours  

CE 4104 Theory Of Structures II  
**Pre-requisites:** CE 4102  
Three credit-hours  

CE 4106 Steel Structures Design  
**Pre-requisites:** CE 3502, CE 4102  
Three credit-hours.  

CE 4108 Concrete Structures Design  
**Pre-requisites:** CE 3502, CE 4104  
Three credit-hours.  

CE 4202 Geotechnical Engineering I  
**Pre-requisites:** ENGI 1140, ENGI 3110, ENGI 3420, CE 3004  
Three credit-hours.  

CE 4204 Geotechnical Engineering II  
**Pre-requisites:** ENGI 3120, CE 4202  
Three credit-hours.  
Compressibility of soils, consolidation settlements, rate of consolidation. Subsoil exploration and sampling. Soil strength parameters and their use in the evaluation of pressure on retaining structures, soil bearing capacity, and slope stability. Basic concepts of deep foundations.

CE 4207 Geotechnical Engineering Lab  
**Pre-requisites:** ENGI 3120, CE 4202  
One credit-hour  

CE 4302 Highway And Transportation Engineering I  
**Pre-requisites:** SURV 2091, CE 3004  
Three credit-hours  
CE 4304 Highway And Transportation Engineering II  
Pre-requisite: CE 3502, CE 4202, CE 4302  
Three credit-hours  
Pavement design. Capacity and level of service of two-lane highways. Capacity and level of service of multilane highways. Capacity and level of service of basic freeway segments. Freeway weaving analysis. At-grade intersections control and design.

CE 4306 Highway And Transportation Engineering III  
Pre-requisite: CE 4304  
Three credit-hours  

CE 4402 Water Supply Engineering  
Pre-requisite: CE 3402  
Three credit-hours  

CE 4502 Construction Project Management  
Pre-requisites: ETH 2020, ENGI 4210, CE 3502  
Three credit-hours  

CE 4900 Civil Engineering Senior Design Project  
Pre-requisites: Approval of the Department Head – CE 4104, CE 4204, CE 4304, CE 5404, CE 4502  
Three credit hours.  
Introduction to research methodologies including: title and objective development, literature review, research justification, experiment or analytical design. Results manipulation and evaluation. Open-ended research project in a specific area of Civil Engineering.

CE 5002 Civil Engineering Practice  
By agreement.  
Pre-requisite: NONE  
Three credit-hours  
Civil engineering design procedures are applied to the solution of problems under the supervision of a non-faculty member. The problem may deal with any of the fields of civil engineering, as determined by the instructor.

CE 5004 Advanced AutoCAD For Civil Engineering  
Pre-requisites: ENGI 1110  
Three credit-hours  
Introduction to the knowledge of graphical vocabulary for the preparation of construction documents, including the technical specifications and their development by computer assisted tools. The topics include AutoCAD used as a tool for the preparation of civil engineering construction documents. Evaluation of technical specifications for the civil engineering area and the relation with the drawings.
CE 5102 Advanced Reinforced Concrete Design  
Pre-requisite: CE 4108  
Three credit-hours  
Advanced analysis and design of reinforced concrete structures and composite structures. Short and slender columns. Two way floor systems. Concrete walls.

CE 5104 Foundation Engineering  
Pre-requisites: CE 4106, CE 4108, CE 4204, CE 4207  
Three credit-hours  
Evaluation of sub-soil conditions as they affect the behavior, proportions and choice of type of foundation. Combined and strap footings. Retaining walls. Sheetpiling walls. Pile group and pile cap design. Mat foundations.

CE 5106 Matrix Computer Analysis Of Structures  
Pre-requisite: CE 4104  
Three credit-hours  
Matrix analysis methods for bar-element structures, with particular emphasis on the stiffness method application, computer implementation, and the usage of spreadsheets and analysis packages.

CE 5108 Prestressed Concrete Structures Design  
Pre-requisite: CE 4108  
Three credit-hours  

CE 5110 Earthquake Engineering  
Pre-requisite: CE 4108  
Three credit-hours  

CE 5112 Bridge Design  
Pre-requisite: CE 4108  
Three credit-hours  

CE 5114 Computer Analysis And Design Of Structural Systems  
Pre-requisite: CE 4108  
Three credit-hours  
Use of computer software packages to model different structural systems. Analysis for different load conditions. Design of structural elements.

CE 5116 Design Of Wood Structures  
Pre-requisite: CE 4104  
Three credit-hours  
Vertical design loads and lateral forces. Design of beams and columns for vertical loads. Design of horizontal diaphragms and shear walls for lateral forces. Connection design, including the overall tying together of the vertical and lateral force-resisting systems.
CE 5118 Construction Documents For Civil Engineering  Three credit-hours
Pre-requisites: CE 4106, CE 4108
An introduction to the field of construction documents as a design tool, including the knowledge of graphical vocabulary for the preparation of working drawings, the technical specifications and their development by computer assisted tools. The topics include AutoCAD used as a tool for the preparation of civil engineering construction documents. Evaluation of technical specifications for the civil engineering area and the relation with those drawings.

CE 5202 Geotechnical Engineering III  Three credit-hours
Pre-requisites: CE 4204, CE 4207

CE 5204 Design With Geosynthetics  Three credit-hours
Pre-requisites: CE 4204, CE 4207
Soil improvement techniques using geosynthetics for separation, reinforcement, filtration, drainage, and as moisture barriers. Uses of geotextiles, geogrids, geonets, geomembranes, and geocomposites.

CE 5206 Special Topics In Geotechnical Engineering  Three credit-hours
Pre-requisites: CE 4204, CE 4207
Design of scale models and testing to simulate geotechnical engineering applications including bearing capacity of shallow foundations, earth retaining structures, slope stabilization, and the use of geosynthetics. Demonstration of the basic principles of soil-structure interaction.

CE 5208 Soil Improvement  Three credit-hours
Pre-requisites: CE 4204, CE 4207
Current ground modification techniques to improve soil stability, reduce deformation, control seepage, and increase erosion resistance.

CE 5210 Software Applications In Geotechnical Engineering  Three credit-hours
Pre-requisites: CE 4204, CE 4207
Use of computer programs for geotechnical engineering applications including bearing capacity analysis, footing design, stress within a soil mass, slope stability, earth pressure, settlement analysis, and flow nets.

CE 5302 Pavement Design  Three credit-hours
Pre-requisites: CE 4204, CE 4306

CE 5304 Traffic Engineering  Three credit-hours
Pre-requisite: CE 4306
CE 5306 Advanced Traffic Engineering  
Pre-requisite: CE 5304  

CE 5308 Urban Transportation Planning  
Pre-requisite: CE 4306  

CE 5310 Computer Aided Design In Transportation And Highway Engineering  Three credit-hours  
Pre-requisite: CE 4306  
Quantitative techniques applied in transportation analysis. Shortest path algorithms. Computer applications in highways engineering and urban planning.

CE 5402 Wastewater Engineering  
Pre-requisite: CE 4402  

CE 5404 Environmental Engineering For Civil Engineers  
Pre-requisite: CE 4402  

CE 5406 Open Channel Engineering  
Pre-requisite: CE 3402  

CE 5408 Computer-Aided Design In Hydraulic And Environmental Eng.  
Pre-requisite: CE 4402  
Definition of hydrologic and hydraulic parameters for simulation. Analysis of existing conditions. Design of proposed conditions using computer tools. Hydrologic and hydraulic applications. Integration of hydrologic and hydraulic studies.

CE 5412 Applied Surface Water Hydrology  
Pre-requisite: CE 3402  
Occurrence and distribution of water by natural processes including precipitation, runoff, infiltration, water losses, flood routing, catchment’s characteristics. Precipitation runoff models. Current hydrologic computer models.
CE 5510 Construction Planning, Scheduling, And Cost Estimates  
Pre-requisite: CE 4502  
This course discusses cost estimate studies for construction projects from conceptual and preliminary estimates to detailed estimates for bidding. Also discusses the work plan development and the use of several scheduling techniques as critical path method, program evaluation and review technique, and linear scheduling diagrams.

CE 5512 Construction Methods And Productivity Improvement  
Pre-requisite: CE 4502  
This course discusses technical aspects of the construction, and how they can be improved. Study of construction methods for heavy and building construction.

CE 5514 Legal Aspects In Engineering Practice  
Pre-requisite: CE 4502  
Contractual aspects in the construction industry. Discussion of the legal documents used as contractual documents and the general conditions stipulated in the different contracts used by the industry.

CE 5516 Construction Project Administration  
Pre-requisite: CE 4502  
This course discusses the project lifecycle and the corresponding administration strategies, as well as the project procedures and documents, as developed by American Institute of Architects and the Engineers Joint Contract Documents Committee. It also addresses practical issues related to negotiations, claims, value engineering, safety, risk allocation, and liability.

CE 5518 Managing For Quality In Construction  
Pre-requisite: CE 4502  
This course discusses traditional management practices and why total quality management and other quality approaches are replacing them. The ideas and theories of total quality management, as developed by Deming, Juran, and Ishikawa, will be examined and related to the learning organization, reengineering, and ISO 9000. It also addresses practical issues related to quality initiative implementation and application in construction.

CE 5520 Computer Applications In Construction  
Pre-requisite: CE 4502  

CEC 3000 Object Oriented Programming (C/C++) I  
Pre-requisite: MAT 2000 or MAC 1105  
Introduces students to computers; Algorithm development, UNIX, and C++ are discussed in detail. The introduction covers top down analysis, problem analysis, flow charts, and pseudocode. Structured programming and development and debugging are also emphasized. C++ coverage includes variables, data types, operators, and functions.
CEC 3070 Visual Basic Programming
Pre-requisite: CEC 3000
Three credit hours
This course introduces the student to Visual Basic. Course covers the fundamentals of visual programming in Visual Basic. Topics discussed cover: variables and operators, using decision structures, loops and timers, strings, modules, procedures, and arrays.

CEC 3300 Object Oriented Programming (C/C++) II
Pre-requisite: CEC 3000
Three credit hours
The course continues with the development of programming skills using C++. It emphasizes modular program design, arrays, and pointer usage. Structured data types (arrays, structures, and linked list) and dynamic storage is introduced. The course presents some object-oriented concepts.

CEC 3650 Data Structures
Pre-requisite: CEC 3000 or MAT 2000
Three credit hours
The course covers the understanding of data structures and programming logic and their implementation using C++ or another similar language. The course emphasizes on recursion, and the use of pointers, lists, stacks, queues, and trees. Searching and sorting techniques are also discussed. Several programs are assigned.

CEC 4000 Database Systems
Pre-requisite: CEC 3650
Three credit hours
The course begins with an overview of the concepts, role, nature and purpose of database systems and computers in the application environment. It presents the relational model (as the primary design tool for today’s database systems), hierarchies and SQL. The course explores database constraints from the standpoint of integrity.

CEC 4050 Data Communications
Pre-requisite: CEC 3300
Three credit hours
This course is concerned with the exchange of data between two directly linked devices. The key aspects of transmission, interfacing, link control, and data transfers are examined. The physical and data link layers are discussed.

CEC 4100 Operating Systems
Pre-requisite: CEC 3300
Three credit hours
The course discusses various aspects of computer operating systems: processes, concurrent programming, and deadlocks.

CEC 4120 Assembly Programming Language
Pre-requisite: CEC 3000
Three credit hours
This course introduces students to the fundamental principles of machine language. Basic concepts such as number or data representation (binary, hexadecimal and others), branching and looping, memory organization, operands, instruction cycle, addressing modes, exception handling, etc. are introduced.
**CEC 4200 Internet Programming**
*Pre-requisite: CEC 3300*
The course introduces the student to JAVA programming. How to create applets in JAVA; JAVA applets vs. autonomous programs; simple mathematical operations with JAVA applets; how to force JAVA applets to make decisions; how to make JAVA applets repeat one or more instructions; use of functions to simplify the applets; interaction with HTML and other topics.

**CEC 4650 Software Engineering I**
*Pre-requisite: CEC 4000*
This course presents an engineering approach to the development of large software development projects. The course explains the successive steps of requirements analysis, specifications, designs, coding, debugging and testing, maintenance, and thorough documentation.

**CEC 4710 Computer Science Senior Project I**
*Pre-requisite: Senior Standing*
Design of projects based on open-minded requirements. Projects will be selected to cover most areas of interest (i.e. Computer Software, Database Systems, investigative research based on issues that concern computer science and technology etc.). Projects will be selected in accordance with the student's area of interest.

**CEC 4750 Design and Analysis of Algorithms**
*Pre-requisite: CEC 3650*
This course covers issues that arise in the analysis and design of algorithms used for solving computational problems. A number of common algorithm design paradigms and examples are presented and explained. Algorithm design issues are contemplated. Computability and computational tractability concepts are introduced. The importance of time and space requirements are greatly considered as the student designs algorithms to solve computational problems.

**CEC 4800 Electronic Commerce (EC) Technology**
*Pre-requisite: CEC 3300*
This course will study the structure, organization, and use of the Internet. Internet technologies and their potential applications are examined including electronic commerce, database connectivity, and security. An emphasis will be placed on evaluating, organizing, and developing efficient models of electronic transactions and Web Information Systems. Prerequisite: CEC 3300. (3 credits)

**CECS 2004 Discrete Structures**
*Co-requisites: MAT 2650*
Fundamental mathematical concepts related to computer science, including finite and finite sets, relations, functions, and prepositional logic. Introduction to other proofing techniques. Modeling and solving problems in computer science. Introduction to permutations, combination graphs, and trees with applications.
CECS 2202 Computer Programming I  
Prerequisites: MAT 2650, ENGI 2310  
Co-requisites: CECS 2203  
Course introduces students to computers: Algorithm development, UNIX, and C++ language are discussed in detail. The introduction covers top-down analysis, problem analysis, flow charts and pseudo code. Structured programming and debugging are also emphasized. C++ coverage includes variables, data types, operators, and functions. Programming problems are assigned weekly.

CECS 2203 Computer Programming I Laboratory  
Prerequisites: MAT 2650, ENGI 2310  
Co-requisites: CECS 2202  
This is an intensive programming laboratory. Students will apply UNIX editor and C++ compilers in continuous programming exercises. Programs assigned in the Co-requisite class will be developed and tested, in addition to the laboratory programs.

CECS 2222 Computer Programming II  
Prerequisites: MAT 2650, CECS 2202  
Co-requisites: CECS 2223  
The course continues with the development of algorithms and programming skills using C++. It emphasizes modular program design, arrays, and pointer usage. Structured data types (arrays, structures, and linked list) and dynamic storage is introduced. The course presents object-oriented concepts.

CECS 2223 Computer Programming II Laboratory  
Pre-requisites: None  
Co-requisites: CECS 2222  
This intensive programming laboratory is the continuation of CECS 2203. Students will write programs assigned in the co-requisite course, in addition to the laboratory programs. A major program design and development project is required.

CECS 3210 Advanced Programming  
Pre-requisites: CECS 2222  
The students will use the object-oriented model to analyze, design, and implement software applications. Some existent object-oriented languages like C++, Java, or C# will be used to develop the applications.

CECS 3212 Data Structures  
Pre-requisites: CECS 2222  
The course covers the understanding of data structures and programming logic and their implementation using C++ or another similar language. The course emphasizes on recursion, and the use of pointers, lists, stacks, queues, and trees. Searching and sorting techniques are also discussed. Several programs are assigned.

CECS 3302 Data Communications  
Pre-requisites: COE 3300  
This course is concerned with the exchange of data between directly linked devices. The key aspects of coding for transmission, interfacing, link control, and data transfers are examined. The OSI-model physical and data link layers are discussed. Design projects required.
CECS 4202 Database Systems  
Pre-requisites: CECS 3212  
Three credit-hours  
This course is an introduction to the database concept. The course covers data models, relational database concepts, hierarchies, relational algebra and SQL, storage structures and the role of databases and computers in application environments. Various programming assignments in SQL and a design project are required.

CECS 4204 Software Engineering  
Pre-requisites: CECS 4202  
Three credit-hours  
This course presents an engineering approach to the development of large software development projects. The course explains the successive steps of requirements analysis, specifications, designs, coding, debugging and testing, maintenance, and thorough documentation. A major design project is required.

CGS 1100 Computer Science  
Pre-requisites: NONE  
Three credit-hours  
An introduction to computer fundamentals including information processing, operation, and usage of an operating system. Applications in word processing, electronic spreadsheets, electronic filing systems are presented.

CGS 2405 Intermediate Programming in C Language  
Pre-requisites: CGS 1100  
Three credit-hours  
An advanced application programming course using the C language. Emphasis will be on the design and use of structure computer algorithms for problem solving using “C”. Topics covered will include the design of independent modules, processing of text data as input, advanced sorting techniques, various file handling techniques, advanced data manipulation and data structures.

CHM 1025 Introduction to Chemistry  
Pre-requisites: MAC 1105  
Three credit-hours  
Elementary principles of modern chemistry, including concepts of atomic and molecular structure, chemical bonding, stoichiometry, and the properties of solutions.

CHM 1045 Chemistry for Engineers  
Pre-requisites: NONE  
Four credit-hours  
This course is designed for students with engineering major. Major topics in modern chemistry include: stoichiometry, atomic structure, bonding, thermo chemistry, acids and bases, solutions, gas laws, kinetics and molecular equilibria.

COE 3300 Logic Circuits  
Pre-requisites: CECS 2202  
Co-requisites: COE 3301  
Four credit-hours  
This course covers a full range of topics such as number systems and codes, digital circuits, Boolean algebra, minimization of logic functions, combinational logic design and practices, introduction to combinational logic design with PLDs, sequential logic design principles and practices. A general exposure to the combinational design of an Arithmetic-Logic Unit (ALU) and the sequential design with PLDs. ROM and RAM system-level design is given. Design Projects will be required.
**COE 3301 Logic Circuits Laboratory**  
**Zero credit-hour**

**Pre-requisites:** CECS 2203  
**Co-requisites:** COE 3300

This laboratory provides an experimental study using the TTL digital logic circuits. Two levels of integration are used: small-scale integration (SSI) and medium-scale integration (MSI). These logic circuits are then used in such applications like: combinational logic analysis and design, multiplexing, decoding, arithmetic and comparison operations, memory devices, counting, and sequential logic analysis and design. Computer simulation will also be required.

**COE 3320 Microprocessors**  
**Three credit-hours**

**Pre-requisites:** COE 3300  
**Co-requisites:** COE 3321

The aims of this course are to present fundamental assembly language programming, microprocessor architecture, teach advanced fundamentals techniques to interfacing. The student will develop topics around a Motorola MC68HC12 microprocessor. The simulators used on the course are able to develop software embedded systems applications. The specific objectives of this course include the understanding of: the basic procedures involved in software simulation, how information is represented on the computer.

**COE 3321 Microprocessors Laboratory One**  
**credit-hour**

**Pre-requisites:** COE 3301  
**Co-requisites:** COE 3320

The course provides an introduction to microprocessor systems programming, including both hardware interfacing and software fundamentals. What is and what do real applications need for interfacing to actual physical devices in order to perform desired I/O operations. The approach taken is to develop software using a microprocessor-based simulation in an IBM PC compatible computer. Other objectives include that the students learn to connect external hardware devices to the microprocessor system, while following safe and reliable procedures.

**COE 4906 Computer Engineering Design Project**  
**Three credit-hours**

**Pre-requisites:** Fourth-year Computer Engineering student with 3.00 or higher GPA.  
**Departmental Permit.**

Research study in advanced topics in areas of computer engineering like data communication systems, digital testing, digital signal processing, artificial intelligence, computer security, distributed systems, and parallel computation, among others.

**COE 5320 Computer Architecture**  
**Four credit-hours**

**Pre-requisites:** COE 3320  
**Co-requisites:** COE 5321

This course introduces students to the fundamental concepts and architectural structures of computers. The basic elements of computer architecture; Central Processing Unit, Arithmetic and Logic Units, Memory Management Unit, and Register Stacks are studied. The conceptual division between data path and control unit is emphasized. Memory hierarchy and its impact on Von Neumann architecture performance is studied. Recent advances in computer architecture (from a complex instruction set to a reduced instruction set - RISC) are studied and justified from a performance and implementation perspective. A quantitative emphasis is maintained throughout the course.
**COE 5321 Computer Architecture Laboratory**

Zero credit-hour

Pre-requisites: None

Co-requisites: COE 5320

Students explore several of the issues involved in Instruction Set Design, and similar architectural building blocks. Students use VHDL and similar modeling and simulation languages that allow them to make quantitative evaluations of the tradeoffs between space (H/W), time, and complexity.

**COE 5330 Computer Networks**

Three credit-hours

Pre-requisites: CECS 3302

Co-requisites: COE 5331

Focuses on the ISO-layers above the Data link layer. Problems solved by each layer are discussed and the entities, techniques and protocols used as solutions are presented and discussed in detail. Algorithms for routing, spanning tree, and others are presented. Techniques for improving flow control, their impact on performance, and criteria for their adoption are discussed. IP addressing schemes and address translation between addressing levels are discussed. The course closes with the discussion of various application-level protocols; file transfer, network management and others.

**COE 5331 Computer Networks Laboratory**

One credit-hour

Pre-requisites: CECS 3302

Co-requisites: COE 5330

The laboratory exemplifies the techniques and devices that implement the solutions to communication problems discussed in class. Covers structured wiring schemes and their combination with wireless access schemes. Configures communication protocol stacks within various operating systems. Simulation and analysis of techniques that solve important communication problems. Covers various communication applications and issues of security and reliability related to different network topologies and configurations.

**COE 5340 Microcomputer Interfacing**

Four credit-hours

Pre-requisites: COE 3320

Co-requisites: COE 5341

The aims of this course is to present advanced computer architecture, teach advanced assembly language programming, and advanced techniques to interfacing. The student will develop topics around a Motorola MC68HC12 microprocessor simulator. The simulator used on the course can developed hardware/software embedded systems. The specific objectives of this course include the understanding of: the basic procedures involved in hardware/software simulation, how information is represented on the computer, the basic arithmetic and logical operations performed by the computer, the fundamental architecture of the MC6811 and MC6812 microcomputers.

**COE 5341 Microcomputer Interfacing Laboratory**

Zero credit-hour

Pre-requisites: None

Co-requisites: COE 5340

This course provides an introduction to advanced microprocessor systems, including both hardware interfacing and software fundamentals. What is and what do real applications use for interfacing to actual physical devices in order to perform desired I/O operations. The approach taken in this course is to develop hardware and software using a computer board interface. The students will be able to build their designs using a microprocessor laboratory board.
COM 3010 Database Management  
**Pre-requisites:** NONE  
**Three credit-hours**  
A study of the principles of a database system. Surveys the methodology used in database management and analyses the software and programming of the database environment.

ECO 2013 Principles of Microeconomics  
**Pre-requisites:** NONE  
**Three credit-hours**  
A study of basic economic concepts. Topics include the modern national income formation theory, economics fluctuations, money, banking monetary, and fiscal policy, economic stabilization theory and policy, the public sector, economic growth and development, and comparative economics systems.

EE 3000 Circuit Analysis I  
**Pre-requisites:** PHY 2049, MAT 2650  
**Co-requisites:** MAT 3100  
**Three credit-hours**  

EE 3001 Electrical Measurements Laboratory  
**Pre-requisites:** EE 3000  
**One credit-hour**  
Modern electronics measurement methods. Instrument calibration and use. Experimental verification of fundamental laws of electric circuits and magnetism. Experimental study of capacitive and inductive circuits. Use computer programs to analyze circuits. Safety consideration in the laboratory.

EE 3012 Numerical Analysis for Electrical and Computer Engineers  
**Pre-requisites:** CECS 2202  
**Co-requisites:** EE 3000  
**Three credit-hours**  

EE 3020 Circuit Analysis II  
**Pre-requisites:** MAT 3100, EE 3000  
**Three credit-hours**  

EE 3030 Electromagnetic Theory  
**Pre-requisites:** PHY 2049, MAT 3100  
**Three credit-hours**  
Study of time-varying electric and magnetic fields and Maxwell’s equations describing time-varying fields. Use of Maxwell’s equations to describe the propagation of electromagnetic plane waves at unbounded and bounded material media. Reflection and transmission of waves at discontinuous boundaries.
**EE 3220 Software Applications for Electrical Engineering**  
*Three credit-hours*  
**Pre-requisites: CECS 2202**  
Basic knowledge of various engineering software applications that have proven to be very intensively used in the industry and academic environments. Introduction to Microsoft Office, MATLAB, SIMULINK, MathCAD and Or CAD Family Design Center.

**EE 3400 Electromechanical Energy Conversion I**  
*Three credit-hours*  
**Pre-requisites: EE 3000, EE 3030**  
The study of the transformers, rotating machinery basics and DC machines under steady state. Safety considerations with the electric machines.

**EE 3401 Electromechanical Energy Conversion I Laboratory**  
*One credit-hour*  
**Pre-requisites: EE 3001, EE 3400**  
Experimental study of electrical machines. Safety considerations with electric machines. This course is designed to give electrical engineering students a one trimester course in laboratory work on: electrical and mechanical measurements and basic operation characteristics of transformers (single and three phases) and DC machines used as motor and as generators.

**EE 3410 Electromechanical Energy Conversion II**  
*Three credit-hours*  
**Pre-requisites: EE 3400**  
The study of the three phase transformers and one phase/three phase ac induction motor.

**EE 3411 Electromechanical Energy Conversion II Laboratory**  
*One credit-hour*  
**Pre-requisites: EE 3401, EE 3410**  
Experimental study of induction (single and three phases), universal and synchronous motors. Safety considerations with electric machines. This course is designed to give electrical engineering students a one-trimester course in laboratory work on: electrical and mechanical measurements and basic operation characteristics of AC machines (single and three phases).

**EE 3420 Power System Analysis I**  
*Three credit-hours*  
**Pre-requisites: EE 3400**  
**Co-requisites: EE 3410**  
The study of the power concepts in a process of generation, transmission and distribution of an electric system.

**EE 3500 Electronics I**  
*Three credit-hours*  
**Pre-requisites: EE 3000**  
This course is the first of a three-course series in electronics. Subjects include operational amplifiers, semiconductor devices, diodes, rectification, bipolar transistors, amplification, switching, and an introduction to field-effect transistors. Design and analysis techniques are presented for each subject.

**EE 3520 Electronics II**  
*Three credit-hours*  
**Pre-requisites: EE 3020, EE 3500**  
This is the second course in a three-course series in electronics. More advanced topics of semiconductor devices are introduced. Discussion topics include differential amplifiers, multistage amplifiers, frequency response, and design and analysis of other common amplifier configurations using MOSFETs and bipolar transistors.
EE 3521  Electronics Laboratory
Pre-requisites: EE 3001, EE 3520
Experimental study of analog linear circuits that use semiconductor devices as active components.

EE 3800 Principles of Electrical Engineering
Pre-requisites: PHY 2049
Introduction to fundamental electrical engineering concepts. Study of electrical quantities such as current, voltage, energy, and power. Study of the ideal behavior of resistors, inductors, and capacitors as well as various independent and dependant ideal energy sources. Introduction to basic techniques of electrical circuit analysis.

EE 4000 Signals and Systems
Pre-requisites: EE 3020

EE 4400 Power System Analysis II
Pre-requisites: EE 3420
Co-requisites: EE 3411, EE 4401

EE 4401 Power System Analysis Laboratory
Pre-requisites: EE 3420
Co-requisites: EE 4400
Experiments with electric power transmission and distribution systems, three phase generation, power lines, power transformers, synchronous motors, motor connections and speed regulation, loading and unloading characteristics of frequency converters, phase shifting and phasor diagrams. Safe Laboratory Procedures.

EE 4440 Electric System Design
Pre-requisites: EE 3020, EE 3400
General Design of electrical systems based in the National Electrical Code.

EE 4500 Electronics III
Pre-requisites: EE 3520, EE 4000
Advanced theory, design, and simulation techniques for linear, analog integrated circuit building blocks. Topics include feedback, output stages, power amplifiers, and a thorough analysis of the 741 operational amplifiers.

EE 4600  Automatic Controls
Pre-requisites: EE 4000, EE 3520
Study of linear control systems. Transfer functions. Stability criteria. Compensation techniques. Analysis of a particular system and determination of an optimal design complying with given specifications. A design project will be required.
**EE 4610 Automation Engineering**  
**Pre-requisites:** COE 3300, COE 3301  
**Co-requisites:** EE 4611  
Study of the theory and practices of the technologies used for industrial automation. The PLC is used as the main micro-controller device to interface with sensors, relays, electro-pneumatics, and motors. Different problems and situations are presented to the students and they prepare and design the solution. A final project is presented at the end of the class.

**EE 4611 Automation Engineering Laboratory**  
**Pre-requisites:** COE 3300, COE 3301  
**Co-requisites:** EE 4610  
Experimental exercises with sub-systems used on industrial control applications. The PLC is used as the main micro-controller. Design and programming of PLC based systems are performed. A field trip to the industry is made as part of the laboratory.

**EE 4704 Analog Communication Systems**  
**Pre-requisites:** ENGI 2210, EE 4000  

**EE 4710 Random Processes**  
**Pre-requisites:** ENGI 2210, EE 4000  
After completing this course the students should master the theoretical principles regarding Probability and Random Processes and be familiar with some of its basic applications to electrical engineering. Topics include Probability, Random Variables, Operations in Single and Multiple Random Variables, Random Processes, Spectral Characteristics of Random Processes, Linear System with Random Inputs.

**EE 4906 Electronics Senior Design Project**  
**Pre-requisites:** EE 5601, EE 5714  
Research study in advanced topics in areas of electronics.

**EE 4908 Power Senior Design Project**  
**Pre-requisites:** EE 5431  
Research study in advanced topics in area of power.

**EE 5430 Power System Protection**  
**Pre-requisites:** EE 4400  
Introduction and general philosophies of protection systems. Analysis of power system during faults and abnormal conditions. Application of protective relays in electric power systems. Study of protection schemes for Transmission and Distribution lines, Substations, Transformers and Generators.
EE 5431 Power System Protection Laboratory  
One credit-hour
Pre-requisites: EE 5430
Experimental work with protective relays. Calibration, testing and setting of relays. Discussions topics include transient effects in power system networks, short circuit analysis using symmetrical components, instruments transformer PT=s and CT=s test, simples protective relaying coordination studies, over current relays, directional over current relays, bus and transformer differential relays and simulation.

EE 5436 Distribution System Design  
Three credit-hours
Pre-requisites: EE 4400

EE 5444 Advanced Electric System Design  
Three credit-hours
Pre-requisites: EE 3420, EE 4440
General Design of electrical systems based in the National Electrical Code.

EE 5464 Generation Control Systems  
Three credit-hours
Pre-requisites: EE 4400

EE 5500 Power Electronics  
Three credit-hours
Pre-requisites: EE 4600
Co-requisites: EE 5501
Electrical rating and characteristics of power semiconductor switching devices. Phase controlled rectifiers. Fundamental switching regulators. DC choppers. Static power inverters. Load considerations. Design projects will be required.

EE 5501 Power Electronics Laboratory  
One credit-hour
Pre-requisites: EE 3521
Co-requisites: EE 5500
Experiments with the Power Electronics Converters: AC-DC, DC-DC, and DC-AC. Closed-loop control of DC drives and Closed-loop control of induction motors. Use of computer programs to analyze circuits. Safety consideration in the laboratory.

EE 5600 Process Control & Instrumentation  
Three credit-hours
Pre-requisites: ENGI 3420, EE 4600
Study of process control strategies. Electronic and pneumatic instrumentation. Linearization of nonlinear continuous systems. Application of linear control theory to nonlinear continuous process. Study of a particular process and determination of the necessary instrumentation and control strategy to be used. Study of ladder logic networks and its implementation with PLC controllers. Design projects will be required.
**EE 5601 Process Control & Instrumentation Laboratory**  
*One credit-hour*

Prerequisites: EE 5600

Experiments for process control and instrumentation. Transducers, transmitters, analog and digital controllers, controls valves, switches, and indicators. Experiments with a process control trainer and programmable logic controllers.

**EE 5630 Robotic Engineering Design**  
*Four credit-hours*

Prerequisites: EE 4600, EE 4610

Co-requisites: EE 5631

Study of the technology, programming, applications, theory and practices of robotic systems. All the basic systems of the robots are covered including manipulators, hardware components, sensors and programming. The course covers design, and applications.

**EE 5631 Robotic Engineering Design Laboratory**  
*Zero credit-hour*

Prerequisites: EE 4611

Co-requisites: EE 5630

Experimental exercises with sub-systems used in robotic applications. Design and programming of PLC based systems are performed. A field trip to the industry is made as part of the laboratory.

**EE 5710 Microwaves and Satellite Communications**  
*Three credit-hours*

Prerequisites: EE 3030, EE 5714

Analysis and design of microwave and satellite communication systems including the study of satellite transponders, earth stations and satellite networks. Analog and digital modulation schemes, as well as antennas and microwave components are studied at a block system level. A final project or report is required.

**EE 5714 Digital Communication Systems**  
*Three credit-hours*

Prerequisites: EE 4704

Co-requisites: EE 4710


**EE 5720 Digital Signal Processing**  
*Three credit-hours*

Prerequisites: ENGI 2210, EE 4000

Topics include LSI systems, the DTFT, the DFT, and the FFT. Sampling. Study of linear and cyclic convolution. The Z-transform. Filter structures. Introduction to FIR and IIR digital filter design. Several DSP applications are discussed and demonstrated. A design project is required.

**EE 5723 DSP Fundamentals Laboratory**  
*One credit-hour*

Prerequisites: EE 5720

MATLAB-based experiments for teaching and illustrating fundamentals DSP concepts such as: Frequency Response, Filtering, Fast Fourier Transforms, Filter Design, Spectral Analysis, etc. Laboratories include filtering of audio signals and spectral analysis of various time series.
ENGL 0100 Preparatory English
Pre-requisites: NONE
Three credit-hours
The course is designed to develop basic written and oral skills. It promotes oral communication and personal expression, giving special emphasis to the development of vocabulary. By performing language functions, students acquire the basic skills of the English language.

ENGL 0110 English Grammar
Pre-requisites: ENGL 0100 or Placement by Admission Office.
Three credit-hours
Fundamental course in language designed to provide students with grammar skills in English for listening and writing with emphasis in increasing student’s capability of developing logical thinking both in speaking and writing.

ENC 1003 Advanced English Preparatory
Pre-requisites: ENGL 0110 or Placement by Admission Office
Three credit-hours
This course is designed with the necessary reading skills students need to succeed in their everyday life as well as in their academic atmosphere. Students are expected to improve their reading skills as well as speaking and writing.

ENC 1101 English Composition I
Pre-requisites: ENC 1003 or Placement by Admission Office
Three credit-hours
This is a required general education course in college-level writing. Emphasis is placed on unified, coherent, and organized essay writing. Sentence and paragraph structure and writing fundamentals will also be reviewed.

ENC 1102 English Composition II
Pre-requisites: ENC 1101
Three credit-hours
This is a required general education course in college level writing and builds on the foundation of English Composition I. Further development of the students’ skills in composition, essay, communication, and research are included. Prerequisite: ENC 1101.

ENGI 1110 Engineering Graphics
Pre-requisite: None
Three credit-hours
An introduction to the field of engineering graphics as a design and documentation tool. Topics include orthographic projection, pictorial drawings, dimensioning, feature control symbols and tolerance. Use of a CAD system to create engineering drawings.

ENGI 1130 Freshman Engineering Design
Pre-requisite: ENGI 1110
Three credit-hours
An introduction to the engineering design philosophy, techniques, and methodology with emphasis on teamwork so as to develop the creativity and imagination skills of the student in the solution of engineering problems. Critical thinking and logic presentation of an engineering analysis.
**ENGI 1140 Earth Sciences**

*Three credit-hours*

**Pre-requisites:** CHM 1045


---

**ENGI 2110 Engineering Mechanics, Statics**

*Three credit-hours*

**Pre-requisites:** MAT 2650, PHY 2048


---

**ENGI 2210 Engineering Probability And Statistics For Engineers**

*Three credit-hours*

**Pre-requisites:** MAT 2000


---

**ENGI 2310 Computer Programming & Algorithms**

*Three credit-hours*

**Pre-requisites:** MAT 2000

The students will learn the steps that lead to the possible solution to a problem. In addition, the course presents the tools used in the development of a program.

---

**ENGI 3110 Mechanics Of Materials I**

*Three credit-hours*

**Pre-requisites:** ENGI 2110

Introduction to the mechanics of deformable bodies. Study and analysis of stresses and strains on connections and bar elements subjected to axial, torsional, and transverse loads. Internal forces as stress resultants, shear force and bending moment diagrams. Design of connections and structural members. Transformation of stresses, Mohr’s Circle.

---

**ENGI 3120 Mechanics Of Materials II**

*Three credit-hours*

**Pre-requisites:** ENGI 3110, CE 3004


---

**ENGI 3410 Engineering Mechanics, Dynamics**

*Three credit-hours*

**Pre-requisite:** ENGI 2110

Kinematics and kinetics of particles and rigid bodies. Work and Energy and Impulse and Momentum methods.

---

**ENGI 3420 Fluid Mechanics**

*Three credit-hours*

**Pre-requisites:** ENGI 3410, MAT 3100

**ENGI 3430 Thermodynamics**

*Three credit-hours*

**Pre-requisite:** ENGI 3420


**ENGI 3499 Mechanics Statics and Dynamics**

*Three credit-hours*

**Pre-requisite:** PHY 2048, MAT 2650


**ENGI 4210 Engineering Economics**

*Three credit-hours*

**Pre-requisite:** MAT 2000


**ETH 2020 Ethics In Engineering**

*Three credit-hours*

**Pre-requisite:** None

Study of the philosophical and legal aspects of ethics and their application to the professional responsibility in the field of engineering.

**ETH 3020 Contemporary Social Problems in Computers and Technology**

*Three credit-hours*

**Pre-requisite:** None

Study and analysis of contemporary social problems that affect the engineering profession: e.g. ethical issues, conservation of the environment, restriction of financial resources, and possible solutions to these problems.

**ETH 3050 Ethical and Legal Aspects of Computers and Technology**

*Three credit-hours*

**Pre-requisite:** None

This course introduces students to the social, legal and moral aspects of computing, and the dilemmas that result from the evolution of computer technology. Course contents include ethical theory, decision making, professional code of ethics, “hacking” and computer crime, law enforcement, privacy and intellectual property issues, as well as environmental/health issues.

**FIN 2000 Principles of Finance**

*Three credit-hours*

**Pre-requisites:** NONE

This course is an introductory course reviewing the creation allocation and utilization of money, and the effect of monetary policy upon individuals, business, national and international economics.

**HUM 1020 Humanities**

*Three credit-hours*

**Pre-requisites:** NONE

A basic approach to the creative ideas, works, and accomplishments of various cultures from the areas of art, drama, music, and literature.
**HUE 1999 Selected Topics in Humanities**  
*Three credit-hours*

**Pre-requisites: NONE**
In-depth, intensive study of selected topics in the area of Humanities. If different topics are studied, this course may be taken twice for credit.

**ISY 3510 Management Information Systems**  
*Three credit-hours*

**Pre-requisites: NONE**
Introduction to the concepts of management information systems. Emphasis on system design. Analyze the organization in terms of its structure and information requirements. Identify major subsystems of the organization. Such as requirements planning, manufacturing, human resources, etc.

**ISY 3540 Computers and Information Technology**  
*Three credit-hours*

**Pre-requisites: NONE**
Provides students with a conceptual foundation in the areas of computer architecture, operating systems, programming, and telecommunications. Intended to serve as a facilitating course to allow the students to communicate effectively with technical members of the IT community.

**ISY 3550 Data Communications and Networks I**  
*Three credit-hours*

**Pre-requisites: COM 3010**
A study of topics in teleprocessing. Analysis of data transmission, channels, computer equipment configuration, security of teleprocessing systems. Teleconferencing, electronic mail, electronic fund transfer, integration of teleprocessing and automation, internet, electronic commerce and EDS concepts.

**ISY 4510 Systems Analysis and Design**  
*Three credit-hours*

**Pre-requisites: ISY 3510**
This course introduces the student to the basic system analysis tools and the procedures to conduct a systems analysis. Topics covered include: initial analysis, logical design, and proposal preparation. Students gain experience through projects and/or case studies.

**ISY 4520 Computer Security and Audit**  
*Three credit-hours*

**Pre-requisites: ISY 3510**
This course is an introduction to systems auditing with emphasis on identification and correction of deficiencies, audit controls, and security. Topics include: audit techniques, security measures, and data security during transmission.

**ISY 4530 Local Area Network Systems**  
*Three credit-hours*

**Pre-requisites: ISY 3550**
This course examines LAN technology, the use of data, text, voice and image technology across a network, and the impact of automation in the enterprise. Students learn how to install, run, maintain, and manage a LAN.

**LIT 2411 Literature and Culture Issues**  
*Three credit-hours*

**Pre-requisites: NONE**
In this course the student will delve into the basics of literature. The creation of imaginative literature will be reviewed as well as the aesthetic value. Consideration will be given to techniques and theories with the focus on practical criticism. Several genres and literary periods will be studied.
**MAC 1105 College Algebra**  
*Three credit-hours*

**Pre-requisites:** MAT 0050 or Equivalent; Placement Test by Admission Office

A detailed introduction to the fundamental concepts of algebra. Topics include linear and quadratic equations, graphing, functions, inequalities, rational expressions, radicals, and system of equations. The course emphasizes critical thinking and problem solving skills.

**MAC 1147 Pre-Calculus Algebra and Trigonometry**  
*Three credit-hours*

**Pre-requisites:** MAC 1105 or equivalent

This covers topics in Algebra and Trigonometry including linear and quadratic equations, solutions of triangles and complex numbers, rational expressions, functions, and radian measure. Prerequisite: MAC 1105. (3 credits)

**MATH 0102 Preparatory Mathematics**  
*Three credit-hours*

**Pre-requisites:** Placement Test by Admission Office

Study of basic operations on natural, whole integers, rationals, irrational numbers. Includes also fundamental properties of arithmetic, percent, ratio and elements of algebra; polynomial-basic operations; algebraic fractions; exponents and radicals and applications. A grade of “C” or better must be earned for placement in the next course.

**MATH 0110 Algebra**  
*Three credit-hours*

**Pre-requisites:** MATH 0102 or Equivalent; Placement Test by Admission Office

This course includes the study of linear and nonlinear inequalities in one variable, inequalities and equations with absolute value; linear and quadratic equations, functions with applications, and relations and functions with its graphs. Includes also the study of algebra of functions, special functions, operations with functions, and inverse functions. A grade of “C” or better must be earned for placement in the next course.

**MATH 1330 Pre-calculus I**  
*Three credit-hours*

**Pre-requisites:** MATH 0110 or equivalent; Placement Test by Admission Office

Relations and functions; linear and quadratic functions; curve sketching, rational functions, polynomial functions, synthetic division, remainder and factor theorems; zeros of polynomials graphs; trigonometric functions and graphs; sine and cosine laws, solutions of right and oblique triangles, analytic geometry, identifies and trigonometric equations; logarithmic functions, matrix and linear algebra. A grade of “C” or better must be earned for placement in the next course.

**MAT 2000 Calculus I**  
*Four credit-hours*

**Pre-requisites:** MAT 0110 or MAC 1147; Placement test by Admission Office

Limit, the derivative and its applications; finding derivatives by means of rules; chain rule, higher order derivatives; differentials; maxima and minima; related rates of changes; curve sketching using derivatives, definite and indefinite integrals, integrations; L’Hospital Rule and area under a curve.

**MAT 2650 Calculus II**  
*Four credit-hours*

**Pre-requisites:** MAT 2000

The course presents the area between curves, volumes of solids of revolution, hydrostatic pressure, surface area, moments and centroids, differentiation and integration of transcendental functions, integration techniques, indeterminate forms, trigonometric integrals and inverses, improper integrals, and introduction to hyperbolic functions, its derivatives and integrals.
**MAT 3100 Differential Equations**  
**Three credit-hours**  
**Pre-requisites:** MAT 2650  
Includes the solution and applications of first order differential equations, linear differential equations of higher order, differential equations with variable coefficients, Laplace transforms, and its applications.

**MAT 3400 Discrete Mathematics**  
**Three credit-hours**  
**Pre-requisites:** MAT 2000  
Includes the study of functions of several variables, partial derivatives, multiple integrals and their applications, vector analysis and surface integrals. Stoke’s, Green’s, and Gauss’s Theorems; convergence and divergence of sequences and series.

**MAT 5000 Advanced Topics in Mathematics**  
**Three credit-hours**  
**Pre-requisites:** MAT 3100  
This course covers different topics of mathematics such as algorithms, graphs, path and circuits, applications of path and circuits, trees, applications, of derivatives, integrations of functions with Matlab (multiple integrals, Romberg integration, and adaptive quadrature), series and Fourier series.

**MAR 1011 Principles of Marketing**  
**Three credit-hours**  
**Pre-requisites:** NONE  
This course deals with the distribution of goods from producer to consumer and covers such topics as market research and analysis, buying and selling, product design, pricing, promotion, transportation, competition, and the responsibilities of the marketing manager.

**MARK 3410 Sales and Retail Management**  
**Three credit-hours**  
**Pre-requisites:** MAR 1011  
This course presents problems in hiring and supervising sales people. It focuses on prospective evaluation methods of sales people, budget and control of sales. Study of incentive plans to stimulate sales. Study of sales and retail functions for a business. Considerations of problems that may arise in sales and retail for small and large organizations, operation control, design of facilities and new strategies developed in the retail business.

**MARK 3430 Product Management**  
**Three credit-hours**  
**Pre-requisites:** MAR 1011  
This course focuses on the study of techniques and practices used in creating, developing and implementing new products in the market. The product life cycle and marketing strategies that can be used in each stage is analyzed. Case study of real products and projections of future products.

**MARK 3450 Advertising**  
**Three credit-hours**  
**Pre-requisites:** MAR 1011  
This course teaches existing techniques and skills used in advertising. It focuses in the more effective way to develop an advertising plan to reach the objectives. It shows how advertising is applied to products, service, manufacturers or retail business and profit and non-profit organizations. It analyzes the advertising media and new techniques in Internet.
MARK 3460  Public Relations  
Pre-requisites: MAR 1011 
This course studies public affairs as a professional activity for business promotion in terms of the different groups that can influence a business. It focuses on the techniques and skills for the evaluation of advertising outcomes, public image and relations with communication media. How to maintain a good image before the consumers and how to conceptualize the business and its products in terms of quality and service.

MARK 4410 Marketing Research 
Pre-requisites: MAR 1011, STA 2010, CGS 1100 
Study the research activity in the marketing field, data collection analysis and methods. Emphasize marketing quantitative techniques, computers role in marketing research, control and evaluation of the marketing function.

MARK 4470 Marketing Project 
Pre-requisites: Academic Department Authorization 
The Marketing Project course is oriented to integrate the knowledge and skills that student obtain in marketing area. The student will be using his presentation, research, creative and organization skills. The marketing project must be assigned by the professor in two principal aspects: First, make a research project creating a marketing plan for a professor theme. Second, the student can work in a company in marketing area (not sales). A written paper is required.

MGMT 3210  Construction Management 
Pre-requisites: MGT 2021 
This course discusses the concepts of Construction Management with emphasis in the contractor enterprise organization includes the operation and administration of a construction company, trade of services, costs control, and the project organization. It also addresses the basic concepts of economy used in the construction projects organization.

MGMT 3220  Construction Contracts and Legal Documents 
Pre-requisites: MGT 3650 
Study of construction contracts and legal documents, specifically: definitions, interpretation and utilization of drawings, specifications agreements, bidding forms, general conditions, bonds, subcontracts and related documents. Cover the impact of the legal systems on corporate strategy, managerial decisions and planning processes; consumer, contract, commercial and secured financing laws. Also, discuss employer liability to PROSHO/OSHA, regulation aspects of the construction industry.

MGMT 3230  Construction Materials and Methods 
Pre-requisites: MAC 1105 & MGMT 3210 
Introduction to the materials and methods of building construction drawings. Discussion the foundation, structural framing, floor, roof and wall systems, mechanical, electrical and communication installations. Field Trip.

MGMT 3240  Construction Estimates and Costs 
Pre-requisites: FIN 2000 & MGMT 3210 
The course presents the necessary concepts to prepare a construction cost estimate. It exposes the student to different elements of direct and indirect costs that are considered conceptual or detailed cost estimates.
**MGMT 4210 Project Planning and Control (PERT)**
*Three credit-hours*

**Pre-requisites:** MGMT 3210

Study the Network planning techniques for project management and resource allocation. Emphasis on PERT, CPM, heuristic models for multi-project, and scheduling. The use of computer software for project planning will be covered. Management techniques of construction are discussed in relation to alternative means of project execution. Organizational structures, management systems and controls are examined from the point of view of owners, constructors and managers.

**MGMT 4270 Construction Management Project**
*Three credit-hours*

**Pre-requisites:** Academic Dept. Authorization

Study the stages of a construction project form the development and planning, to estimating cost, construction, project control and final stage. Students must apply real world construction projects to different techniques and models learned. The work performed by the students will be supervised by instructors from the Business Administration Program. A written paper is required.

**MGT 2021 Principles of Management**
*Three credit-hours*

**Pre-requisites:** NONE

This course analyzes the major functions of management including planning, staffing, directing, and controlling. Emphasis is placed on learning how to manage organizations. Topics include goal setting, strategic planning, decision making, and organizational structure.

**MGT 3110 Managerial Accounting**
*Three credit hours*

**Pre-requisites:** ACC 2011

Focuses on the compilation, use and analysis of financial accounting as tools for management decision process, the role of the accounting manager in the enterprise, and the interpretation of financial systems; the use of costs as a tool for planning and controlling the activities of manufacturing and distributing merchandise as well as directing service enterprises. Emphasis on quantitative aspects of budgets, cost per unit, break-even point and decision process techniques.

**MGT 3120 Critical Thinking for Managers**
*Three credit-hours*

**Pre-requisites:** NONE

Principles, procedures, and practices of good communication and their relationship to management supervision are discussed. Oral and written communication skills as well as critical thinking skills and time management planning are emphasized.

**MGT 3210 Managing Diversity in the Workplace**
*Three credit-hours*

**Pre-requisites:** NONE

The course gives recognition to cultural diversity and strategies associated with workplace management. Concepts, delivery strategies, and values associated with cultural diversity are examined.
**MGT 3220 Leadership in Organizations**  
**Pre-requisites:** NONE  
This course examines the skills for understanding and leading individuals and groups in attaining both personal and organizations objectives are developed. The basic concepts of motivation, control changed, team building, and developing effective relationships in diverse work environments are examined. Proactive leadership devices such as organizational development, decision-making, and influence techniques are presented.

**MGT 3610 Human Resources Management**  
**Pre-requisites:** NONE  
A framework for the study, understanding, and application of human resources management in an organization. It includes topics such as EEO, and global human resource management. Job analysis, recruitment, performance evaluation, compensation, employee benefits and safety are also included.

**MGT 3620 Organizational Behavior**  
**Pre-requisites:** NONE  
This course focuses on the importance of understanding behavior in organizational settings and applying scientific methods to the resolution of managerial problems and the improvement of the organization.

**MGT 3630 Organizational Development**  
**Pre-requisites:** NONE  
The course studies organizational change, processes, decision making styles, organizational effectiveness, efficiency, and productivity. It emphasizes the use of innovative models of intervention theories, corporate evolution, and organizational cultural change. The course focuses in the development of a new philosophy of doing business.

**MGT 3640 Organizational Communications**  
**Pre-requisites:** NONE  
The role of communication in the effective management of formal organizations is studied. Contemporary communication theory as well as a set of strategies and methods helpful in analyzing an organization’s ability is examined.

**MGT 3650 Business Law and Ethics**  
**Pre-requisites:** NONE  
Current topics in the area of law, regulatory controls, and ethical issues and their effect on decision making are examined. Attention is given to developing critical thinking skills to make humane and informed choices in resolving managerial dilemmas which pose ethical or legal problems.

**MGT 4020 Project Management**  
**Pre-requisites:** NONE  
The course examines the formal and informal functions of organizations and diagnose an agency or organization based on a systems model. Student will analyze and solve problems using systematic approaches associated with project management.
**MGT 4030 Financial Management**  
*Three credit-hours*

**Pre-requisites:** ACC 2011 (BBA), FIN 2000 (BSOM)

Utilization of accounting and financial data as a managerial decision tool is discussed. Students will explore methods of measuring the financial strength and stability of organizations through financial statements, ratios, and current market data.

**MGT 4130 Managing Change**  
*Three credit-hours*

**Pre-requisites:** NONE

This course examines concepts and strategies for managing change in the business environment. Processes, procedures, and skills for managing change are also discussed.

**MGT 4230 Marketing Management**  
*Three credit-hours*

**Pre-requisites:** NONE

Management of the marketing function of firms. Fundamental procedures for decision-making in areas such as promotion, product research, channel selection, and pricing.

**MGT 4410 Quality Assurance**  
*Three credit-hours*

**Pre-requisites:** NONE

The modern management principles of the quality movement are presented. The history of total quality management, process management, and implementation of quality assurance programs in organizations are examined.

**MGT 4570 Management Information Systems Practice**  
*Three credit-hours*

**Pre-requisites:** Senior Standing

This course is designed to provide the student with practical and real life experiences in the field. A written report reflecting the course experiences will be prepared by the student.

**MGT 4610 Total Quality Management**  
*Three credit-hours*

**Pre-requisites:** STA 2010

The course presents the different elements in the total quality control management function. It focuses upon the foundations of quality control and their industrial applications. Statistical principles will be used as a basic tool in decision making related to the variables that need to be controlled.

**MGT 4620 Strategic Management**  
*Three credit-hours*

**Pre-requisites:** NONE

This course studies contemporary models geared toward development of strategies, planning, and control of organizations. It focuses on strategic management and business policy as well as the decision making process to develop competitive organizations.

**MGT 4630 International Business**  
*Three credit-hours*

**Pre-requisites:** NONE

This course examines the aspects and activities of international business and offers insight into the importance of world trade among multinational organizations. The diversity among international markets is also examined.
**MGT 4670v Management Practices**  
**Pre-requisites:** Senior Standing  
This course is designed to provide the student with practical and real life experiences in the field. A written report reflecting the course experiences will be prepared by the student.

**MSE 1999 Selected Topics in Mathematics or Sciences**  
**Pre-requisites:** NONE  
In-depth, intensive study of selected topics in the areas of Mathematics or Sciences. If different topics are studied, this course may be taken twice for credit.

**PHY 2600 Physics I**  
**Pre-requisites:** MAT 2000  
Principles and applications of mechanics. Includes motion in one, two, and three dimensions, Newton’s Laws, work and energy, rotation, static equilibrium of a rigid body, particles, and conservation of momentum.

**MUL 1010 Music Appreciation**  
**Pre-requisites:** NONE  
A chronological survey of music from pre-history to modern day. Students will discover music as an important social force throughout history.

**PHY 2048 Physics I**  
**Pre-requisites:** MAT 2000  
This course covers classical mechanics and thermodynamics.

**PHY 2049 Physics II**  
**Pre-requisites:** PHY 2048  
This course is a continuation of PHY 2048 and includes electricity, magnetism, waves and optics.

**PSY 2012 Introduction to Psychology**  
**Pre-requisites:** NONE  
This course is designed to be an overview of the field of psychology. It provides a basic understanding of human behavior.

**PSC 1121 Physical Science**  
**Pre-requisites:** NONE  
A general study of the common phenomena, concepts and principles selected from astronomy, physics and chemistry.

**SCI 0110 Introduction to Physics**  
**Pre-requisites:** NONE  
Introduction to Physical Sciences with classroom demonstrations. Includes the following: general guidelines about history and development of scientific thought and method, measurements and conversion of units and some useful fundamental mathematics for physics, basic concepts in mechanics; motion description in one and two dimensions. A grade of “C” or better must be earned for placement in the next course.
SSE 1999 Selected Topics in the Social Sciences
Pre-requisites: NONE
Three credit-hours
In-depth, intensive study of selected topics in the area of Social Sciences. If different topics are studied, this course may be taken twice for credit.

SYG 2000 Introduction to Sociology
Pre-requisites: NONE
Three credit-hours
An overview of society with emphasis on the relationships between human culture and the individual. It looks at cultural norms, the organization of society, human behavior in groups, social institutions, and the implications of social change.

SPC 1026 Fundamentals of Speech Communications
Pre-requisites: ENC 1101
Three credit-hours
This course reviews the oral communication skills necessary for success in the student’s personal, professional and educational settings. The student will develop appropriate communication behaviors.

SPN 1120 Elementary Spanish I
Pre-requisites: NONE
Three credit-hours
A course designed for beginners to acquire proficiency in the basic skills of Spanish listening/understanding, speaking, reading, and writing. Emphasis is placed on vocabulary and pronunciations.

SPN 1121 Elementary Spanish II
Pre-requisites: SPN 1120
Three credit-hours
A continuation of Elementary Spanish I, this course is designed to take the beginning Spanish speaking learner to the next level. Continued emphasis is placed on listening/understanding, speaking, reading, and writing.

SSE 1999 Selected Topics in Social Sciences
Pre-requisites: NONE
Three credit-hours
In-depth, intensive study of selected topics in the area of Social Sciences. If different topics are studied, this course may be taken twice for credit.

STA 2010 Probability and Statistics
Pre-requisites: MAC 1105
Three credit-hours
Introduction to the fundamentals of descriptive and inferential statistics; procedures for the collection organization and analysis of data; frequency distributions, graphing techniques, measures of central tendency, measures of dispersion, standard deviation and probability distributions.

SURV 2091 Surveying Instruments Laboratory For Engineers
Pre-requisite: ENGI 1140, ENGI 2210
One credit-hour
A workshop and laboratory to acquaint civil engineering students with the usage and application of levels and transits at construction projects.

WOH 2012 World Civilization I
Pre-requisites: NONE
Three credit-hours
A survey course emphasizing world civilizations from the prehistoric period to the 18th century. Discussion traces events which have shaped our cultural history.
IX. GRADUATE PROGRAMS

GRADUATE SCHOOL

POLYTECHNIC UNIVERSITY OF PR
YOUR DOOR FOR THE FUTURE
GRADUATE SCHOOL

The Graduate School at Polytechnic University of Puerto Rico - Orlando Campus provides a solid foundation in business concepts and technological perspective to those students who aim to receive a Master Degree. The graduate program contributes to the intellectual and professional formation of students through the development of critical and analytical thinking skills, enabling students to relate to the reality of the entrepreneurial world and the convergence of technology and management. The program is designed to create awareness of the social responsibility of management within the global economic system and the importance of effective communication. It encourages creative leadership, and flexibility to adapt to rapid change. Polytechnic University of Puerto Rico - Orlando Campus offers a Master of Business Administration degree and a Master in Engineering Management degree as part of the Graduate Program.

CAREER OPPORTUNITIES
Graduates from this program are highly regarded and sought by the manufacturing, hospitality, health, production and construction industries, as well as the Government and service sector of the economy. The program prepares students to assume managerial responsibilities in today’s technological environment.

MISSION
The Graduate School of Polytechnic University of Puerto Rico - Orlando Campus provides opportunities for individuals from diverse backgrounds to enhance their potential for leadership, productivity and competitiveness with a sense of social responsibility toward their communities, through exposure to intellectual, humanistic and technological advancement, in the business administration field.

PROGRAM EDUCATIONAL OBJECTIVES
The educational objectives of the Graduate School are:

- Develop technically educated individuals that can effectively function as business administrators or entrepreneurs in their communities.
- Develop graduates with a well developed social conscience.
- Develop graduates that contribute to the advancement of the body of knowledge in all areas of business administration.

DEGREE OFFERED
The Graduate School offers graduate instruction leading to the degree of Master of Business Administration (MBA) with six (6) areas of specialization: Management of Technology, Management of International Enterprises, General Management Studies, Accounting, Finance, and Human Resources. Polytechnic University of Puerto Rico - Orlando Campus also offers graduate instruction leading to the degree of Master of Engineering Management (MEM) with four (4) areas of specialization: Construction Management, Manufacturing Management, Environmental Management, and General Engineering Management.

PREPARATORY COURSES
The MBA and MEM programs are designed to allow the participation of students with diverse educational backgrounds. Students registering for the MBA or MEM program are encouraged to meet certain preparatory courses before entering the core courses. Listed

MINIMUM REQUIREMENTS
The MBA degree requires a minimum of 39 credit hours of graduate course work with a minimum grade point average of 3.0 on a 4.0 system. No thesis or comprehensive exams are required.

The MEM degree requires a minimum of 39 credit hours of graduate course work with a minimum grade point average of 3.0 on a 4.0 system. No thesis or comprehensive exams are required.

Polytechnic University of Puerto Rico - Orlando Campus will accept transfer of graduate credits from regionally accredited institutions. The maximum amount of acceptable transfer credits, per program, is up to 18 credit hours. Transfer of credits can be considered only for courses completed with a grade of “B” or better prior to admission to the University. These credits must have been earned within ten years before the date of admission to the specific degree program. No credits will be considered for courses completed elsewhere after admission to the University.

ACADEMIC LOAD
The minimum full-time load per term is six (6) for graduate students. To register for nine (9) credit hours or more, the student must acquire the approval of the Department Director.

MASTER IN BUSINESS ADMINISTRATION (MBA)

The student must complete the following minimum requirements to earn the Master in Business Administration Degree.

<table>
<thead>
<tr>
<th>REQUIRED CREDIT-HOURS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Courses</td>
<td>18</td>
</tr>
<tr>
<td>Business Courses</td>
<td>12</td>
</tr>
<tr>
<td>Academic Track</td>
<td>9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>39</td>
</tr>
</tbody>
</table>

CORE COURSES (18 Credit Hours)

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>MBA CR-HRS</th>
<th>PRE REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGM 5500</td>
<td>Managerial Accounting</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGM 5700</td>
<td>Probability and Statistical Methods</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGM 6070</td>
<td>Managing Human Resources</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGM 6560</td>
<td>Management of Information Systems</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGM 6620</td>
<td>Managerial Finance</td>
<td>3</td>
<td>MGM 5500</td>
</tr>
<tr>
<td>MGM 6690</td>
<td>Decision Making Techniques</td>
<td>3</td>
<td>MGM 5700</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>
### BUSINESS COURSES (12 Credit Hours)

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>MBA CR-HRS</th>
<th>PRE REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBA 5600</td>
<td>Managerial Economics</td>
<td>3</td>
<td>MGM 5000, MGM 6620</td>
</tr>
<tr>
<td>MBA 5700</td>
<td>Managerial Marketing</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MBA 6830</td>
<td>Operations Management</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MBA 6900</td>
<td>Strategic Management</td>
<td>3</td>
<td>MBA Core Courses</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>12</strong></td>
<td></td>
</tr>
</tbody>
</table>

### MBA - MANAGEMENT OF INTERNATIONAL ENTERPRISES ACADEMIC TRACK

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>MBA CR-HRS</th>
<th>PRE REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIE 7010</td>
<td>International Business Operations</td>
<td>3</td>
<td>MBA Core Courses</td>
</tr>
<tr>
<td>MIE 7020</td>
<td>International Business Strategies</td>
<td>3</td>
<td>MIE 7010</td>
</tr>
<tr>
<td>MIE 7110</td>
<td>International Finances</td>
<td>3</td>
<td>MGM 6620</td>
</tr>
<tr>
<td><strong>TOTAL CONCENTRATION</strong></td>
<td></td>
<td><strong>9</strong></td>
<td></td>
</tr>
</tbody>
</table>

### MBA - MANAGEMENT OF TECHNOLOGY ACADEMIC TRACK

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>MBA CR-HRS</th>
<th>PRE REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMT 6010</td>
<td>Management of Technology I</td>
<td>3</td>
<td>MGM 6560</td>
</tr>
<tr>
<td>MMT 6020</td>
<td>Management of Technology II</td>
<td>3</td>
<td>MMT 6010</td>
</tr>
<tr>
<td>MMT 6030</td>
<td>Technical Enterprises</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td><strong>TOTAL CONCENTRATION</strong></td>
<td></td>
<td><strong>9</strong></td>
<td></td>
</tr>
</tbody>
</table>

### MBA - ACCOUNTING ACADEMIC TRACK (Requires ACC 3300, ACC 3340)(1)

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>MBA CR-HRS</th>
<th>PRE REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 6500</td>
<td>Accounting Information Systems</td>
<td>3</td>
<td>(1), MGM 6560</td>
</tr>
<tr>
<td>ACC 6600</td>
<td>Advanced Auditing</td>
<td>3</td>
<td>(1), ACC 4320</td>
</tr>
<tr>
<td>ACC 6800</td>
<td>Advanced Financial Accounting</td>
<td>3</td>
<td>(1)</td>
</tr>
<tr>
<td><strong>TOTAL CONCENTRATION</strong></td>
<td></td>
<td><strong>9</strong></td>
<td></td>
</tr>
</tbody>
</table>

### MBA – FINANCE ACADEMIC TRACK

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>MBA CR-HRS</th>
<th>PRE REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIN 6500</td>
<td>Advanced Corporate Finance</td>
<td>3</td>
<td>MGM 6620</td>
</tr>
<tr>
<td>MIE 7110</td>
<td>International Finance</td>
<td>3</td>
<td>MGM 6620</td>
</tr>
<tr>
<td>FIN 6800</td>
<td>Investments</td>
<td>3</td>
<td>MGM 6620, (MBA 5600 or ECO 2013)</td>
</tr>
<tr>
<td><strong>TOTAL CONCENTRATION</strong></td>
<td></td>
<td><strong>9</strong></td>
<td></td>
</tr>
</tbody>
</table>
MBA – HUMAN RESOURCES ACADEMIC TRACK

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>MBA CR-HRS</th>
<th>PRE REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRM 6500</td>
<td>Employee and Labor Law</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>HRM 6600</td>
<td>Training and Development</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>HRM 6800</td>
<td>Compensation and Benefits</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>TOTAL CONCENTRATION</td>
<td></td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

MBA - GENERAL BUSINESS ACADEMIC TRACK

This concentration allows the students to design their own program by selecting courses from any of the other two concentrations, to match their particular interests. A total of 9 credits must be taken.

MASTER IN ENGINEERING MANAGEMENT (MEM)

The student must complete the following minimum requirements to earn the Master in Engineering Management Degree.

<table>
<thead>
<tr>
<th>REQUIRED CREDIT-HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Courses</td>
</tr>
<tr>
<td>Engineering Mgmt</td>
</tr>
<tr>
<td>Academic Track</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

CORE COURSES (18 Credit Hours)

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>MEM CR-HRS</th>
<th>PRE REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGM 5500</td>
<td>Managerial Accounting</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGM 5700</td>
<td>Probability and Statistical Methods</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGM 6070</td>
<td>Managing Human Resources</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGM 6560</td>
<td>Management of Information Systems</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MGM 6620</td>
<td>Managerial Finance</td>
<td>3</td>
<td>MGM 5500</td>
</tr>
<tr>
<td>MGM 6690</td>
<td>Decision Making Techniques</td>
<td>3</td>
<td>MGM 5700</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

ENGINEERING MANAGEMENT

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>MEM CR-HRS</th>
<th>PRE REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEM 5600</td>
<td>Engineering Economic Analysis</td>
<td>3</td>
<td>MGM 5500, MGM 6620</td>
</tr>
<tr>
<td>COURSE NUMBER</td>
<td>COURSE TITLE</td>
<td>MEM CR-HRS</td>
<td>PRE REQUISITES</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------</td>
<td>------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>MEM 6420</td>
<td>Maintenance Management</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MEM 6610</td>
<td>Productivity Management</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MBA 6830</td>
<td>Operations Management</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>TOTAL CONCENTRATION</td>
<td></td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

MEM - CONSTRUCTION MANAGEMENT ACADEMIC TRACK

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>MEM CR-HRS</th>
<th>PRE REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEM 6410</td>
<td>Construction Management</td>
<td>3</td>
<td>MGM 5500, MGM 6620</td>
</tr>
<tr>
<td>MEM 6170</td>
<td>Cost Estimating and Contracting</td>
<td>3</td>
<td>MGM 5500, MGM 6620</td>
</tr>
<tr>
<td>MEM 6820</td>
<td>Business and Construction Law</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>TOTAL CONCENTRATION</td>
<td></td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

MEM - ENVIRONMENTAL MANAGEMENT ACADEMIC TRACK

<table>
<thead>
<tr>
<th>COURSE NUMBER</th>
<th>COURSE TITLE</th>
<th>MEM CR-HRS</th>
<th>PRE REQUISITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPM 6910</td>
<td>Intro. to Environmental Regulations</td>
<td>3</td>
<td>MEM 6110, MEM 6120</td>
</tr>
<tr>
<td>MEM 6920</td>
<td>Environmental Engineering</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>MEM 6930</td>
<td>Energy and Environment</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>TOTAL CONCENTRATION</td>
<td></td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

MEM - GENERAL ENGINEERING MANAGEMENT ACADEMIC TRACK

This concentration allows the students to design their own program by selecting courses from any of the other three concentrations, to match their particular interests. A total of 9 credits must be taken.
MBA/MEM FLOW CHART

MBA/MEM Core Requirements
(18 credit hours)
MGM 6070 – Managing Human Resources
MGM 6560 – Management of Information Systems
MGM 5500 – Managerial Accounting
MGM 6620 – Managerial Finance
MGM 5700 – Probability and Statistical Methods
MGM 6690 – Decision Making Techniques

MBA Track
(12 credit hours)
MBA 5600 – Managerial Economics
MBA 5700 – Managerial Marketing
MBA 6830 – Operations Management
MBA 6900 – Strategic Management

MEM Track
(12 credit hours)
MEM 5600 – Eng. Econ. Analysis
MEM 6110 – Engineering Mgt. I
MEM 6120 – Engineering Mgt. II
MEM 6970 – Engineering Mgt.

MBA Concentrations
(9 credit hours)
One of these tracks

MEM Concentrations
(9 credit hours)
One of these tracks

Mgmt. of Int’l Enterprises
MIE 7010
MIE 7020
MIE 7110

Accounting
ACC 6500
ACC 6600
ACC 6800

HR Mgmt.
HRM 6500
HRM 6600
HRM 6800

Finance
FIN 6500
MIE 7110
FIN 6800

General Mgmt.
Business Elective
Business Elective
Business Elective

Mgmt. of Technology
MMT 6010
MMT 6020
MMT 6030

Manufacturing Mgmt.
MEM 6420
MEM 6610
MBA 6830

Construction Mgmt.
MEM 6410
MEM 6610
MEM 6820

Environmental Mgmt.
EPM 6910
MEM 6920
MEM 6930

General Eng. Mgmt.
MEM Elective
MEM Elective
MEM Elective

Total hours for MBA Program: 39 credit hours
Total hours for MEM Program: 39 credit hours
X. GRADUATE COURSES DESCRIPTION

**ACC 6500 Accounting Information Systems**  
*Three credit-hours*  
Pre-requisites: ACC 3330/3340, MGM 6560  
An introduction to accounting information systems (AIS) and the relationship of AIS to Management Information Systems. Includes analysis of hardware and software, system design and the systems development life cycle (SDLC) approach, database management systems (DBMS), internal control, flowcharting, data flow diagrams and their application to the accounting cycles (revenue, expenditure, conversion). Microsoft Access will be used to develop a basic system.

**ACC 6600 Advanced Auditing**  
*Three credit-hours*  
Pre-requisites: ACC 3330/3340, ACC 4320  
A study of modern auditing techniques. Includes tools and techniques of risk assessment, the audit risk model and the audit plan. The implications and auditing of information systems and technology, GAAS and PCAOB standards, ethics and the Sarbanes-Oxley requirements.

**ACC 6800 Advanced Financial Accounting**  
*Three credit-hours*  
Pre-requisites: ACC 3330/3340  
A study of theory and techniques preparing consolidated financial statements, partnerships, foreign subsidiary accounting and non-profit accounting.

**EPM 6910 Introduction to Environmental Regulations**  
*Three credit-hours*  
Pre-requisites: MEM 6110, MEM 6120  
Discusses the technical, economical, political, administrative and social forces that influence the environmental quality regulations and the use of natural resources. Review of federal and state regulations and programs to minimize air, land, and water pollution.

**FIN 6500 Advanced Corporate Finance**  
*Three credit-hours*  
Pre-requisites: MGM 6620  
This course extends the principles of corporate finance. Value of the firm, raising capital, dividend policy, mergers and acquisitions, derivative instruments and risk management will be studied.

**FIN 6800 Investments**  
*Three credit-hours*  
Pre-requisites: MGM 6620, MBA 5600 or ECO 2013  
Topics include fundamental and technical security analysis, portfolio strategy, risk/return analysis, the operation of U.S. securities markets, investment in fixed income securities, mutual funds, and international investment. Prerequisite: MGM-6620 & MBA-5600 or ECO 2013

**HRM 6500 Employee and Labor Law**  
*Three credit-hours*  
Pre-requisites: NONE  
History, structure, policies, and operations of labor unions, the functioning of industrial relations activities within organizations, and important concepts and terminology in labor management relations. Contract administration is emphasized with a focus on the day-to-day relationships.
HRM 6600 Training and Development  
**Pre-requisites:** NONE  
Three credit-hours  
This course offers the theoretical and applied components of training and development within all types of organizations. Principles of adult learning, identifying training needs, developing and delivering effective training programs, and evaluating training are explored.

HRM 6800 Compensation and Benefits  
**Pre-requisites:** NONE  
Three credit-hours  
This course will examine compensation and benefits programs and how they inter-relate with other strategic programs of the organization. Students will view these programs from both the management and the employee perspective, using both theory and practice to grow in their understanding.

MBA 5600 Managerial Economics  
**Pre-requisites:** MGM 5500, MGM 6620  
Three credit-hours  
Fundamentals of supply and demand, analysis of consumer behavior, analysis of production cost, main structures of the market place, brief introduction to linear programming of the economic systems, and development of economic concepts and macroeconomics.

MBA 5700 Managerial Marketing  
**Pre-requisites:** NONE  
Three credit-hours  
The study of the strategic processes of creating time and place utilities. It deals with how to identify customer’s needs, change those needs to wants, and sustain the desire of the particular product (service or good). How this process can be applied to profit and nonprofit organizations.

MBA 6830 Operations Management  
**Pre-requisites:** NONE  
Three credit-hours  
This is a graduate course in manufacturing techniques. In this course the student will become familiar with the tools, techniques, and types of manufacturing processes and with production planning, scheduling, and control. Topics such as Inventory Control, Just-In-Time, TQM, and World Class Manufacturing will be discussed. Also, introduction to manufacturing systems such as factory layout, robotics, and manufacturing cells will be included.

MBA 6900 Strategic Management  
**Pre-requisites:** Completion of MBA Core Courses  
Three credit-hours  
This course will be studied in the context of cases. Mergers, acquisitions, international boundaries and global perspectives on a broad range of issues are explored. The issues are addressed from the perspective of films ranging in size from small companies to multinationals.

MEM 5600 Engineering Economic Analysis  
**Pre-requisites:** MGM 5500, MGM 6620  
Three credit-hours  
This is a graduate course in engineering analysis emphasizing the planning and control of engineering economics, including manufacturing costs. Project cost evaluation, interest rates, continuous compounding, present worth and capitalization are included. Rate of return, replacement analysis, cash flow diagrams, decision trees, and value engineering techniques are included.
**MEM 6110 Engineering Management I**  
**Three credit-hours**

**Pre-requisites:** MEM 5600

Introduction to the elements of modern management and business practices. This course is designed to provide students with the principles used by professionally trained managers to guide the typical industrial and business enterprise.

**MEM 6120 Engineering Management II**  
**Three credit-hours**

**Pre-requisites:** MEM 6110

This course enables the students to gain an understanding of the fundamental concepts and principles of general management emphasizing their application in technological and scientific organizations. The management process is broken down into: planning, organizing, leading, and controlling.

**MEM 6170 Cost Estimation and Contracting**  
**Three credit-hours**

**Pre-requisites:** MGM 5500, MGM 6620.

This course introduces the engineer to the fundamental principles that govern public enterprises such as government departments, state and municipal government, etc. Probability and decision theory, as well as cost-effectiveness studies are introduced.

**MEM 6410 Construction Management**  
**Three credit-hours**

**Pre-requisites:** MGM 5500, MGM 6620

The management of construction is studied. The course addresses planning, scheduling, controlling, and following different activities such as cost estimation, insurance, accounting, labor relations, etc. The course is designed to help students gain a perspective of the construction industry.

**MEM 6420 Maintenance Management**  
**Three credit-hours**

**Pre-requisites:** NONE

This course is designed to help students gain a perspective regarding the maintenance of buildings, industries, and facilities management. Administrative tools and methodology specific to maintenance activities are introduced. Students learn how to manage money, equipment, materials, and personnel to carry out maintenance functions.

**MEM 6610 Productivity Management**  
**Three credit-hours**

**Pre-requisites:** NONE

This course introduces the engineer to the different approaches to Total Quality Management. Throughout the course, various techniques are discussed, such as TQM, Crosby, Juran, and Deming philosophies are discussed. The concepts of quality circles, zero defect, corrective action, Pareto analysis, and others are discussed.

**MEM 6820 Business and Construction Law**  
**Three credit-hours**

**Pre-requisites:** NONE

Concepts of business law and construction law are discussed. Zoning, codes, and construction litigation are discussed.

**MEM 6920 Environmental Engineering**  
**Three credit-hours**

**Pre-requisites:** NONE

This course introduces the student to the different methods of water purification for industrial use, waste water treatment and disposal, air pollution control, and toxic waste management and disposal.
MEM 6930 Energy and the Environment  Three credit-hours
Pre-requisites: NONE
Introduction to the supply and demand of energy resources, including petroleum, natural gas, coal, nuclear power, solar, wind, and ocean energy sources. Conservation and efficient use of energy in different engineering activities are introduced.

MEM 6970 Engineering Management Problems  Three credit-hours
Pre-requisites: MEM 6120
This is a project course that provides the opportunity to apply concepts and methods studied previously to the solution of problems in engineering administration. Students work individually or in small groups on a number of projects approved by the instructor.

MIE 7010 International Business Operations  Three credit-hours
Pre-requisites: Completion of MBA Core Requisites
This course examines the global environment, and reasons for an organization to become global. Michael Porter’s diamond theory of international competitiveness is discussed, as well as the latest work on the theory of multinational enterprises.

MIE 7020 International Business Strategies  Three credit-hours
Pre-requisites: MIE 7010
This course examines international business strategies using an integrated approach. Functional international strategies are explained in the context of actions taken by global companies in a variety of settings. Foreign exchange and multinational strategies are covered.

MIE 7110 International Finances  Three credit-hours
Pre-requisites: MGM 6620
Financial concepts encountered in engineering situations are discussed. Auditing, budgeting, funding, evaluation of alternatives and control of expenses are discussed.

MGM 5500 Managerial Accounting  Three credit-hours
Pre-requisites: NONE
This graduate course studies the financial and economic principles and techniques of decision making. The role of decision criteria based on generally accepted accounting principles is explained in detail. The student acquires the basic information needed by a manager to have control of the firm and achieve his objectives in an efficient manner. (3 credits)

MGM 5700 Probability and Statistical Methods  Three credit-hours
Pre-requisites: NONE
The course explains various probability and statistical methods to sample, measure dispersion, skewness, and probability distributions. Testing hypothesis, analysis of variance, linear regression, correlation, multivariable analysis, and time series analysis are introduced. Case studies of quality control and engineering decisions are assigned and discussed.

MGM 6070 Managing Human Resources  Three credit-hours
Pre-requisites: NONE
Principles and methodology to manage Human Resources in scientific and technical enterprises. Techniques for hiring, benefits, incentives, promotion, retention, development, etc. are discussed, emphasizing the human dimension. Techniques for handling complaints, insubordination, and violations of regulations are introduced.

Polytechnic University of PR-Orlando Campus Catalog 2011-2012 118
**MGM 6560 Management of Information Systems**  
*Pre-requisites: NONE*  
Information systems designed to support management in the areas of finance, manufacturing, marketing databases, and data communication are introduced.

**MGM 6620 Managerial Finance**  
*Pre-requisites: MGM 5500*  
Financial concepts encountered in engineering situations are introduced based on the fact that they are an integral part of planning, organizing, directing, and controlling activities. The financial cycle of budgeting, accounting, controlling and auditing is discussed.

**MGM 6690 Decision Making Techniques**  
*Pre-requisites: MGM 5700*  
This is a course where the scientific management methods for making decisions and solving administrative problems are explored. Bayesian analysis, linear programming, and analysis of alternatives are discussed. Strategic analysis, projections, forecasting, PERT, CPM, and other management techniques are introduced.

**MMT 6010 Management of Technology I**  
*Pre-requisites: MGM 6560*  
This course examines external environmental factors essential to managing organizations involved in new technologies. Considers the adoption of technologies and innovative processes. The students develop skills in acquiring and interpreting information about the external environment to facilitate technology management.

**MMT 6020 Management of Technology II**  
*Pre-requisites: MMT 6010*  
This course analyzes the issues associated with resource management for a technology based firm. This includes manufacturing technologies, information technologies, work force and materials.

**MMT 6030 Technical Enterprises**  
*Pre-requisites: NONE*  
This course emphasizes the interface of technology with technical issues. Emphasis is given to the spirit of enterprise, business incubators, and the government role.
XI. FACULTY

UNDERGRADUATE FACULTY

Abdel Hassan
ME Educational Technology, Caribbean University
BA Education, Interamerican University of Puerto Rico

Allen Montijo
MA Human Resources, Webster University
BS Industrial Engineering, University of Puerto Rico, Mayagüez

Banistka L. Rodríguez
MA Architecture, University of South Florida
BFA Interior Design, Ringling School of Art and Design

Edmundo Lugo
MS Bilingual Education, City University of New York
BA Education, Interamerican University of Puerto Rico

Eleazar G. Monroy
MS Computer Engineering, Florida Institute of Technology
BE Electrical Engineering, University Central of Venezuela

Gerardo Traverso
MA Project Management, Keller Graduate School of Management
BS Civil Engineering, University of Puerto Rico - Mayagüez

Gianira M. Molinary
MEM Engineering Management, Polytechnic University of Puerto Rico – Orlando Campus
MBA General Management, Polytechnic University of the Americas - Orlando Campus
BBA Business Administration, Universidad Metropolitana - Sistema Ana G. Méndez

Israel Ortiz Olmo III
MBA Information Systems, Polytechnic University of Puerto Rico
BS Computation Mathematics, University of Puerto Rico – Humacao

Jose A. Rodríguez
MEM Engineering Management, Polytechnic University of Puerto Rico – Orlando Campus
BS Electrical Engineering, University of Puerto Rico – Mayagüez

Juan P. Rivera
MS Physics, Columbia University, New York
BS Physics, University of Puerto Rico - Rio Piedras
Leandro Morales
MEM Engineering Management, Polytechnic University of Puerto Rico
MS Electrical Engineering, Polytechnic University of Puerto Rico
BS Electrical Engineering, Polytechnic University of Puerto Rico

Luis A. Ramos
MBA Contract Management, Florida Institute of Technology
MS Electrical Engineering University of Southern California
BS Electrical Engineering University of Puerto Rico - Mayagüez

María Vázquez
MBA Management, Universidad del Turabo - Sistema Ana G. Méndez
BBA Accounting/ Finance, University of Puerto Rico – Rio Piedras

Nilda Silén
MA Curriculum & Supervision, Phoenix University
MA English Education, New York University
BA Languages, University of Puerto Rico – Rio Piedras

Omayra Rosario
MBA Management & Accounting, Universidad Metropolitana - Sistema Ana G. Méndez
BS Accounting, University of Puerto Rico - Humacao

Pablo Matos
MS Mathematics, University of Central Florida
BA Education, Universidad del Sagrado Corazón – Puerto Rico

Rafael Martinez-Pratts
MBA Business Administration, Regent University
BBA Business Administration, Florida International University

Raúl Vargas
MS Civil Engineering, University of Leigh
BS Civil Engineering, UCAB Caracas, Venezuela

Roberto Santos
MS Computer Information, Florida Institute of Technology
BS Mechanical Engineering, University of Central Florida

Sergio Díaz
MBA Accounting, Universidad del Turabo - Sistema Ana G. Méndez
BBA Accounting, Columbia College

Sohrab Shahidi
MS Electrical Engineering, University of Massachusetts-Lowell
BS Electrical Engineering, Kansas University
Tania Cubano  
MA Science Education, University of Central Florida  
BS Chemistry, University of Central Florida

Victor Marrero  
MEM Engineering Management, Polytechnic University of the Americas - Orlando Campus  
BS Surveying, University of Puerto Rico - Mayagüez  
BS Civil Engineering, Polytechnic University of Puerto Rico – Orlando Campus

GRADUATE FACULTY

Auristela Mueses  
PhD Civil Engineering, University of South Florida  
MS Civil Engineering University of Puerto Rico – Mayagüez  
BS Civil Engineering, Instituto Tecnológico de Santo Domingo

Dalia Gil  
PhD Computer Science, Havana Polytechnic Institute  
BS computer Science, Havana Polytechnic Institute

Edna Rodríguez  
EdD Counseling, University of Puerto Rico – Rio Piedras  
MEd Counseling, University of Puerto Rico – Rio Piedras  
BS Health Education, University of Puerto Rico – Rio Piedras

Eduardo Veras  
PhD Mechanical Engineering, University of South Florida  
MS Mechanical Engineering, University of Puerto Rico – Mayagüez  
BS Mechanical Engineering, Pontifical Catholic University Mother and Teacher, Santiago, DR

Héctor Cruzado  
PhD Wind Engineering, Texas Tech  
MS Civil Engineering, Massachusetts Institute of Technology  
BS Civil Engineering, University of Puerto Rico – Mayagüez

Jorge Franchi  
PhD Instructional Systems, University of Central Florida  
MA Instructional Technology, University of Central Florida  
BA Psychology, University of Central Florida

José A. Morales  
PhD Materials Management, Walden University  
MBA Industrial Management, Interamerican University of Puerto Rico  
BS Industrial Engineering, University of Puerto Rico – Mayagüez
Joseph Berrios
PhD Computer Engineering, University of Florida
MS Computer Science, University of South Florida
BS Computer Science, Interamerican University of Puerto Rico

Juan González Juarbe
EdD Physics Education, University of Puerto Rico
MBA Business Administration, University of Puerto Rico
ME Civil Engineering, Lamar State College of Technology
BS Civil Engineering, E University of Texas

Orlando Meléndez
PhD Chemical Engineering, University of Florida
BS Chemical Engineering, University of Puerto Rico – Mayagüez

Philip Tang
PhD Electrical Engineering, University of Central Florida
MS Electrical Engineering, University of Central Florida
BS Aerospace Engineering, State University of New York

Roberto A. Molinary, Esq.
Juris Doctor Pontifical Catholic University of PR Law School
BA Political Science, University of Puerto Rico – Mayagüez

Shawkat Ali
PhD Civil Engineering, University of Illinois
MS Soil Engineering, Asian Institute of Technology
BS Civil Engineering, Bangladesh University of Engineers and Technology

Wilfred Fonseca
PhD Industrial Engineering, University of Missouri-Columbia
MS Industrial Engineering, Georgia Institute of Technology
BS Industrial Engineering, University of Puerto Rico-Mayagüez Campus