Institutional and Academic Outcomes Assessment Plan
Volume 1

January, 2013

Prepared by
The Office of Outcomes Assessment
May, 2002

Revised by the Curriculum Committee of the Academic Council
October, 2002

Approved with Recommendations by the Academic Council
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Contents</td>
<td>I</td>
</tr>
<tr>
<td>Appendices</td>
<td>III</td>
</tr>
<tr>
<td>Motto</td>
<td>V</td>
</tr>
<tr>
<td>Preface</td>
<td>VI</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>IX</td>
</tr>
<tr>
<td><strong>Part I: Introduction</strong></td>
<td></td>
</tr>
<tr>
<td>1. Brief History</td>
<td>1</td>
</tr>
<tr>
<td>2. Licensing and Accreditation</td>
<td>2</td>
</tr>
<tr>
<td>3. Definition of Terms Adopted</td>
<td>5</td>
</tr>
<tr>
<td>4. Mission, Vision, Principles/Values and their Implications, and Goals</td>
<td>9</td>
</tr>
<tr>
<td>4.1 Mission</td>
<td>14</td>
</tr>
<tr>
<td>4.2 Vision</td>
<td>15</td>
</tr>
<tr>
<td>4.3 Principles/Values</td>
<td>16</td>
</tr>
<tr>
<td>4.4 Implications of Principles (Education and External Reality)</td>
<td>17</td>
</tr>
<tr>
<td>4.5 Implications of Principles (Admissions Policy)</td>
<td>17</td>
</tr>
<tr>
<td>4.6 Teaching Goals Inventory</td>
<td>18</td>
</tr>
<tr>
<td>5. Policies</td>
<td>19</td>
</tr>
<tr>
<td>5.1 The Curriculum and its Specific Objectives</td>
<td>19</td>
</tr>
<tr>
<td>5.2 Institutional Strategic Plan 2010-2015</td>
<td>20</td>
</tr>
<tr>
<td>5.3 Goals and Objectives</td>
<td>23</td>
</tr>
<tr>
<td><strong>Part II: The Conceptual Framework of Assessment</strong></td>
<td></td>
</tr>
<tr>
<td>1. Assessment Level of Implementation and Measures</td>
<td>28</td>
</tr>
<tr>
<td>2. Licensing and Accreditation Agency Accreditation Process</td>
<td>29</td>
</tr>
<tr>
<td>2.1 Puerto Rico Education Council (PREC) Licensing Process</td>
<td>32</td>
</tr>
<tr>
<td>2.2 Middle States Commission on Higher Education Accreditation Process</td>
<td>33</td>
</tr>
<tr>
<td>2.3 National Architectural Accrediting Board (NAAB) Accreditation Process</td>
<td>39</td>
</tr>
<tr>
<td>2.4 The Accreditation Board for Engineering and Technology (ABET) Accreditation Process</td>
<td>46</td>
</tr>
<tr>
<td>2.4.1 The Process for Determining Program Educational Objectives and its Assessment Process</td>
<td>58</td>
</tr>
<tr>
<td>2.4.2 The Process for Determining Program Outcomes and Conducting Assessment</td>
<td>62</td>
</tr>
<tr>
<td>2.5 International Assembly for Collegiate Business Education (IACBE) Accreditation Process</td>
<td>64</td>
</tr>
<tr>
<td>2.5.1 Program Expectations</td>
<td>68</td>
</tr>
</tbody>
</table>
2.6 Landscape Architectural Accreditation Board (LAAB) Accreditation Process ........................................ 72
2.7 Baldrige National Quality Program (Education Criteria for Performance Excellence) ......................................................... 85

3. Regular Office Processes .................................................................................................................................................. 87
   3.1 Admissions Process .................................................................................................................................................. 88
   3.2 Mentoring and Enrollment Process .......................................................................................................................... 90
   3.3 Student Retention, Orientation and Educational Services Process ............................................................................. 93
   3.4 Student Academic Achievement Evaluation Process ................................................................................................ 95
   3.5 Honor Program Process ............................................................................................................................................ 99
   3.6 Cooperative Education Program Process ................................................................................................................ 101
   3.7 Budget Preparation Process ................................................................................................................................... 103
   3.8 Financial Aid Process ................................................................................................................................................ 105
   3.9 Student Certification for Graduation Process .......................................................................................................... 108
   3.10 Faculty Development Program Process ................................................................................................................ 110
   3.11 Center for Professional Education and Training Process ........................................................................................ 114
   3.12 Faculty Evaluation Process ...................................................................................................................................... 116
   3.13 Evaluation of the Learning Resources Center (Library) Process .............................................................................. 119
   3.14 Office of Human Resources: Retaining and Recruiting Process ............................................................................... 134
   3.15 Purchasing Process ................................................................................................................................................... 136
   3.16 General Services and Facility Process ........................................................................................................................ 139
   3.17 Information System Process .................................................................................................................................... 147
   3.18 Web Page .................................................................................................................................................................... 153
     3.18.1 Procedure to Apply to Publish in the Web Site ..................................................................................................... 154

Part III: The Learning Outcomes Assessment System .................................................................................................... 156
   1. The Learning Outcomes Assessment System (Course Level) ....................................................................................... 157
     1.1 Design of the Course .................................................................................................................................................. 163
     1.2 The Professor Assigned ........................................................................................................................................... 166
     1.3 Classroom and Environment .................................................................................................................................... 168
     1.4 Students Enrolled ...................................................................................................................................................... 169
   2. Component or Sequence Level ...................................................................................................................................... 171
   3. The Program Level ........................................................................................................................................................ 176
   4. The Institutional Level ...................................................................................................................................................... 181
   5. PUPR School of Engineering Assessment Model ...................................................................................................... 185
   6. Outcomes Indicators, Standards, or Performance Criteria ............................................................................................. 192
   7. References ...................................................................................................................................................................... 196
APPENDIXES
ASSESSMENT INSTRUMENTS

VOLUME I
1. Appendix A - Civil Engineering
2. Appendix B - Industrial Engineering
3. Appendix C - Electrical Engineering
4. Appendix D - Mechanical Engineering
5. Appendix E - Environmental Engineering
6. Appendix F - Chemical Engineering
7. Appendix G - Land Surveying and Mapping
8. Appendix H - Architecture
9. Appendix I - Business Administration
10. Appendix J - Capstone Experience Assessment Instruments A to E
11. Appendix K - Portfolio Assessment Instruments
12. Appendix L - Alumni Survey

VOLUME II
13. Appendix M
   A. Admissions
   B. Mentoring and Enrollment
   C. Student Retention Orientation and Educational Services
   D. Student Academic Achievement Evaluation
   E. Honor Program
   F. Cooperative Education and Placement
   G. Budget Preparation
   H. Financial Aid
I. Student Certification for graduation
   A. School of Engineering
   B. School of Management
   C. School of Architecture

J. Faculty Development Program

K. Center for Professional Education and Training

L. Faculty Evaluation

M. Evaluation of the Learning Resources Center (Library)

N. Office of Human Resources: Retaining and Recruiting Process
   A. Inventario de Inteligencia Emocional
   B. Formulario de Evaluación

O. Purchasing Process

P. Learning Outcomes Assessment System
   A. Evaluation of the Course
   B. Evaluation of the Professor
   C. Evaluation of the Classroom and Environment
   D. Evaluation of the Student
   E. Evaluation of Component or Sequence
   F. Evaluation of Program
   G. Evaluation of Institution
“Doing the right thing for the right reason in the right way is the key to quality of life and that can only come through the power of an educated conscience that aligns us with vision, mission and the true north.”

Stephen Covey, et al; First Things First, Simon & Schuster, Inc; 1994

MOTTO:

“To do the right thing, the right way, for the right reason, at the right time, and at the lowest evaluated cost is the key to quality of life.”

Gilberto A. Vélez Delgado
The Office of Outcomes Assessment was commissioned to implement an institutional assessment program. The objective of this program is to carry out assessment applicable to all tasks, processes and persons in charge to “improve” the performance of all academic programs and administrative offices, to “prove” by providing evidence that the expected outcomes have been achieved and to “inform” or disclose the gathered data to guide the decision making process institution wide. (1)

The assessment to “improve” is a short term cycle, and it is driven by the faculty members or key stakeholders. The development stage starts with the design and planning of the courses, the course components, and the curricula or project/program. During this stage several improvements should be incorporated while the program or project is implemented. This formative mode of assessment leads to produce improvements on a continuous basis.

In contrast to the assessment to “improve”, the assessment to “prove” is a long-term cycle. The development stage requires of statistical data and final results from already implemented models. The analysis of the data will generate inferences and implications. This summative assessment will provide evidence of outcomes, and will close the development stage of the project.

Following the assessment to “prove” the effectiveness of the assessment program, it should identify important stakeholders. The data gathering and its analysis is used to guide the decision making process, increasing the likelihood of dissemination of information and the institutionalization of the changes made as a result of assessment of the outcomes.
The assessment of an academic program will be based on: the accreditation criteria issued by the agencies concerned and the institutional mission and academic objectives. The Office of Outcomes Assessment understands that Assessment to “improve”, Assessment to “prove” and the information disclosure are fundamental stages for the development of an effectively postulated outcomes assessment program.

In order to accomplish their objectives the Office of Outcomes Assessment (OOA) installed a computer system (Teleform) dedicated to the processing of all in-house instruments designed and used in the institution. Additionally thanks to CCRAA Grant the Institutional Research Office acquired: (1) E-Mail Questionnaire, (2) Web Questionnaire for designing some of the instruments to be submitted by Web or e-mail. Every Department, program or office may submit its respective packages of assessment instruments for comments and the collected data to this office for the corresponding statistical analyses. OOA from time to time will store and handle information, as it may deem pertinent to complement what the Departments or offices have supplied.
The Steering Committee drafts the Self Study Report and submits recommendations to the Outcomes Assessment Office.

The Outcomes Assessment Office gathers the accreditation Criteria in effect corresponding to each one of the agencies that act or intervene in the accreditation process of every one of the academic programs offered by PUPR. It also receives recommendations from the Steering Committee.

The Outcomes Assessment Office analyzes the reports and forwards the information to the Steering Committee.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

Every committee prepares its report and submits it to the Steering Committee.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

The Outcomes Assessment Office gathers the accreditation Criteria in effect corresponding to each one of the agencies that act or intervene in the accreditation process of every one of the academic programs offered by PUPR. It also receives recommendations from the Steering Committee.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.

Twelve months prior to a VISIT, PUPR appoints the diverse committees required to draft the self-study. The Steering Committee is responsible of directing the effort.

In close coordination with the Academic Deans and the Department Heads, identifies every one of the institutional processes intended to achieve the mission, vision and the academic objectives.

Confirm that every process is documented, properly described, performance indicators are defined, its periodic data is gathered, and the process is updated periodically.

Keeps a calendar with the dates of the pending accreditation visits by the diverse agencies.

Every person in charge of a process will submit a periodic report to the Outcomes Assessment Office informing of the relevant achievements during the period in consideration.

The diverse committees determine whether additional data is needed. If so, the Outcomes Assessment Office is informed to help gather the same.
EXECUTIVE SUMMARY

This publication is part of the continuing efforts of Polytechnic University of Puerto Rico (PUPR) to institutionalize the process of outcomes assessment. The objective is to implement or to advance significantly the institution-wide assessment plan having in mind that PUPR needs to respond to several customers or constituents, among them the accrediting agencies.

Institutional Description:

PUPR is a private, not for profit, coeducational, non-sectarian, Hispanic University offering seven Bachelor of Science degrees in engineering, one in Land Surveying and Mapping and one in computer science, a bachelor of Architecture and a Bachelor of Business Administration. It holds bachelor’s degree accreditation in civil, environmental, electrical, industrial, mechanical, chemical and computer engineering by the Engineering Accreditation Commission of ABET, Inc. Architecture by The National Architectural Accrediting Board (NAAB). The Land Surveying and Mapping program was accredited by the Applied Science Accreditation Commission of ABET, Inc. Accreditation Board for Engineering and Technology (ABET, Inc.)

111 Market Pl. Suite 1050
Baltimore, MD, 21202
(Phone) (410) 347-7700
(Fax) (410) 625-2238

The School of Management was accredited by: International Assembly for Collegiate Business Education. (IACBE)

11374 Strang Line Road
Lenexa, Kansas 66215, USA
(Phone) (913) 631 3009
(Fax) (913) 631 9154
PUPR also offers the following graduate programs: a) Master of Engineering in: Civil Engineering, Manufacturing Engineering, Mechanical Engineering, Computer Engineering and in Electrical Engineering; b) Master of Science in: Civil Engineering, Computer Engineering, Computer Science, Manufacturing Competitiveness, Manufacturing Engineering and Electrical Engineering; c) Master in Manufacturing Competitiveness; Master in Environmental Protection Management; Master in Business Administration and Master in Engineering Management. The institution is licensed by the Puerto Rico Education Council (PREC) and accredited by the Middle States Commission of Higher Education (MSCHE) at a regional level.

**Educational Objectives**
The Educational Objectives of the diverse undergraduate academic programs are provided in the current undergraduate catalog. The same is true for the graduate programs described in the graduate catalog.

**Constituents**
Polytechnic University of Puerto Rico has defined as its principal constituents the following:

- Licensing and Accreditations Agencies
- Students
- Faculty
- Alumni
- Employers

**Licensing and Accrediting Agencies and Their Respective Processes**
Polytechnic University of Puerto Rico has identified the current accrediting agencies and documented their respective accrediting processes. These are:
1. Council of Higher Education of Puerto Rico (CHEPR) Local Licensing Process
2. Middle States Association of Colleges and Schools (MSACS) Regional Accreditation Process
3. National Architectural Accrediting Board (NAAB) National Accreditation Process
4. The Accreditation Board for Engineering and Technology (ABET) National Accreditation Process for Engineering Computer Science and Land Surveying
5. International Assembly for Collegiate Business Education National Accreditation Process for the School of Management

**Project Evaluation Processes**
Polytechnic University of Puerto Rico has defined and documented the following project evaluation processes.

1. The process for determining program educational objectives
2. A process for determining program outcomes and conducting assessment

**Regular Office Processes**
Polytechnic University of Puerto Rico has identified the following administrative offices, sections or programs and documented their respective operational processes. (Refer to the enclosed Administrative Chart)

1. Admissions Process
2. Mentoring and Enrollment Process
3. Student Retention Orientation and Educational Services Process
4. Student Academic Achievement Evaluation Process
5. Honor Program Process
6. COOPERATIVE Educational Program Process
7. Budget Preparation Process
8. Financial Aid Process
9. Student Certification for Graduation process
10. Faculty Development Program Process
11. Center for Professional Education and Training (CPET) Process
12. Faculty Evaluation Process
13. Evaluation of the Learning Resources Center (Library) Process
14. Office of Human Resources: Retaining and Recruiting Process
15. Purchasing Process
16. General Services and Facilities Process
17. Information System Process
18. WEB Page Editing and Feeding Process
19. CEDUP (Centro Educación a Distancia Universidad Politécnica)

An Institutional and Academic Outcomes Assessment Plan was written, approved and a paper copy was sent to every administration office. The Plan was also exposed in the PUPR WEB Page, Outcomes Assessment section. It may be reached at www.pupr.edu/oa.

Polytechnic University of Puerto Rico
Institutional and Academic Outcomes Assessment Plan

Background: According to the instructions given in its creation, the Outcomes Assessment Office is responsible for developing and overseeing a plan for the implementation of Institutional and Academic outcomes assessment. Refer to attached Figure 1-A.

The plan was submitted for its review and approval to the Academic Council and the Administrative Board in 2001.

Purpose of Assessment
From the institutional stand point, assessment has the purpose of assuring that the institution has developed and implemented an assessment plan and process that evaluates its overall effectiveness in: achieving its mission and goals;
implementation of planning and allocation of resources to carry out the renewal of institutional processes; using institutional resources efficiently; providing leadership and governance; supporting administrative structures and services; demonstrating institutional integrity; and assuring that resources support appropriate learning and other outcomes for its students and graduates.

From the academic standpoint, assessment has the purpose of demonstrating, in a continuous improvement process, that the institution’s students acquire knowledge and develop skills, and competencies consistent with institutional goals and that student at graduation have achieved appropriate higher education goals.

**Underlying Principles**

1. Each administrative office, program and curriculum has clear, measurable outcomes that meet the needs of students and other constituents. There is a clear sense of which outcomes, learning or otherwise, are most important and most valued.

2. There are clear strategies to achieve those goals.

3. The assessment tools are valid and apt. Assessment strategies correspond to the outcomes being assessed. Assessments are embedded in learning activities when appropriate and feasible. Multiple measures are used systematically over time.

4. The results of the assessments are put to good and appropriate use. Positive results are celebrated. Results are shared with those in a position to use them to improve goals, pedagogy, curricula, and/or assessment strategies. Assessment efforts lead to conversations across campus on teaching/learning, mission, and institutional effectiveness.

**Assessment Process**

Within each year’s annual report, each academic department will include a section on academic outcomes assessment composed of:
1. At least three learning outcomes for students in their program;
2. A brief description of how the department is ensuring that students will have learned these three things by the time they complete the program.
3. A brief description of how the department is assessing how well students will have learned these three things by the time they complete the program;
4. A brief report on positive evidence of what students have learned that has been gathered over the past year; and
5. A brief report on how the department has used assessment results in the past year to improve students' learning.
6. If a department does not have all these elements in place by the time its annual report is prepared, it should state in its annual report the steps it will take to ensure that missing elements are in place by the time its next annual report is prepared.

Likewise, every administrative office will include a section on its annual report on outcomes assessment composed of:

1. At least three outcomes
2. A brief description of how the office is ensuring that its constituents, particularly the students, are receiving the highest quality service possible.

**Support for Assessment Activities and Professional Development**

The Planning and Development Institutional Research, and Outcomes Assessment offices are available to assist and support faculty as they learn about assessment; identify learning outcomes, teaching/learning strategies, and assessment strategies; and use assessment results to improve student learning. These offices will ensure that faculty members have opportunities to learn about assessment strategies and that they are aware of such opportunities. Funding and individual consultation are available to support assessment activities.
Institutional and Academic Outcomes Assessment Practices

PUPR will take the following steps to assure institution-wide application of outcomes assessment practices.

1. Institute a standing committee on academic outcomes assessment with representation from all academic units on each campus.
2. Continue to augment the resources in the Library with books, materials, sample rubrics and syllabi, copies of campus surveys, and other helpful resources.
3. Offer two workshops every academic year to educate the academic community about outcomes assessment practices and innovation and maintain a yearly schedule of such activities in the future.
4. Ensure that faculty members and administrators attend professional meetings to keep current in the field of outcomes assessment.
5. Offer two workshops every academic year to the administrative office personnel to acquaint them with the concept of outcomes assessment and help them to implement the practice.
6. Assure ourselves that the outcomes assessment system is in place by the end of academic year 2007-2008 in every academic program. That the system is running smoothly and confirms that it is producing the positive results expected by that end of the academic year, institution-wide, and has reached level five of implementation. (See Figure II-1-B)
<table>
<thead>
<tr>
<th><strong>OBJECTIVES</strong></th>
<th><strong>MEASURES OF EACH OBJECTIVE</strong></th>
</tr>
</thead>
</table>
| 1. Establish a permanent Institutional OA structure (see Fig.1 – A Institution – Wide Evaluation and Assessment Process, source 1) | 1. Institutionalize a permanent standing committee with support and direct involvement of the Strategic Development Plan Committee.  
2. Maintain and involve all constituents in the OA current practices.  
3. Develop a dissemination platform through the Web and other sources that allows the PUPR constituents and the community at large to understand the OA advancement and developments.  
4. Integrate into the OA structure a clear and effective time frame and accountability measure/cycles. |
| 2. Maintain current and on-going monitoring of the Student Learning OA programs at academic departments. | 1. Develop a database depicting current academic OA initiatives linking updated documents such as:  
   a. OA manual  
   b. OA plan (yearly basis)  
   c. OA plan (accrediting horizon)  
2. Coordinate all-academic programs meeting on a regular basis to share current developments, experiences and updated OA plan.  
3. Establish OA programs for pending accreditation programs and supporting disciplines.  
   a. Graduate Programs  
   b. Mathematics and Science Department  
   c. Socio-Humanistic Department |
| 3. Establish standards for every Regular Office Processes in terms of outcomes and on-going assessment.  
   a. Develop training criteria to support the standard development. Provide full support and mentoring on the outcomes development and assessment in all campuses. | 1. Develop an operational manual for every Regular office process that follows.  
   1. Admissions process  
   2. Mentoring and enrollment process  
   3. Student Retention Orientation and Educational Services Process  
   4. Student Academic Achievement Evaluation Process  
   5. Honor Program Process |
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 4 | Develop efficient method for satisfaction assessment and process metrics measurement and feedback using the Baldrige Criteria for Education.  
|   | 1. Identify appropriate assessment tools/processes for Institutional Self-Assessment.  
   a. Report results to Strategic plan Development committee on a yearly basis.  
   2. Disseminate results over campus through different communication channels. |
| 5 | Conduct Student Learning Assessment on a continuous basis at the course level, component or sequence level, the program level and the institutional level. |
|   | 1. Define the themes and subjects that should be taught in each course.  
   2. Confirm the relationship between what is said that should be taught and what it is really taught.  
   3. Insure that the student learned what was said he/she was going to learn.  
   4. Confirm what the student really learned. |

* (1) Owner is a standing Committee. (2) To be defined.*
Part I

Introduction

Brief history; Licensing and Accreditation; Definitions of Terms Adopted; Vision; Mission; Principles; Implications of the Principles (Education and external reality; admissions policy); The Curriculum and its specific objectives; Strategic Objectives.
1. BRIEF HISTORY

Polytechnic University of Puerto Rico (P.U.P.R) is a private, not for profit, coeducational, nonsectarian, Hispanic institution founded in 1966. Until 1974, it offered specialized courses in Land Surveying and Mapping. In 1974, PUPR became a degree granting institution with a 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 in Business Administration with a major in Industrial Management (1990). In 1995, a Bachelor in Architecture program was initiated. A Bachelor of Science in Chemical Engineering and a Bachelor of Science in Environmental Engineering were initiated in 1997. In 1992, the institution started offering a graduate program, a Master’s Degree in Engineering Management.

Additionally, the following online programs are authorized:

- Master of Engineering Management (Sept. 2002)
- MS in Manufacturing Engineering (Sept. 2002)
- MS in Manufacturing Competitiveness (Sept. 2002)
- Master of Engineering in Manufacturing Engineering (Sept. 2002)
- Master in Manufacturing Competitiveness (Sept. 2002)
- MBA in Computer Information Systems (Sept. 2002)

**Outcomes Assessment Initiative**

In May, 2000 the Office of Outcomes Assessment (OOA) published the first draft of the manual of outcomes assessment for the accreditation by the Accreditation Board for Engineering and Technology (ABET) under EC 2000 Criteria. The manual was prepared with the purpose of helping the faculty of PUPR to aid in their quest to discover ways to help the students learn more effectively through disciplined inquiries into teaching and learning in their classrooms. The manual has been revised to encompass the requisites of the other concerned accreditation agencies and is divided in three parts. Part I, Introduction: addresses the vision, mission, principles and their implications, and the Institutional Strategic Plan. Part II, The Conceptual Framework of Assessment addresses the preparing for state licensing renewal (CHE), regional accreditation (MSACS), and the national program accreditations (ABET, NAAB and IACBE). Some of the accreditation processes under ABET EC 2000 which are documented are: the process of preparing for accreditation under ABET Engineering Criteria 2000, the process for determining program educational objectives, and determining the program outcomes and conducting assessment. Regular office processes documented are the following: admissions, student preparatory and retention, cooperative education, student academic achievement, financial aid, mentoring and enrollment, honor program, student certification for graduation, Faculty
Development, Center for Professional Education and Training, Faculty Evaluation Process, Evaluation of the Learning Resources Center (Library), budgeting, and purchasing and CEDUP. Part III, The Learning Outcomes Assessment System at Course level, component or sequence level, program level, and Institutional Level emphasizes or addresses the medullar point of why the Outcomes Assessment Process is being enforced by the accreditation agencies. The teaching-learning process should teach what is essential, relevant or pertinent of every program and confirm that the student internalized what was taught in such a way that he/she be able to analyze, synthesize and evaluate all knowledge acquired.

A set of appendixes is provided containing important material relevant to the outcomes assessment process.
2. LICENSING AND ACCREDITATIONS

A. Puerto Rico Education Council (PREC)

Ponce de León Avenue 268
Hato Rey Building Center 15 Floor
Hato Rey PR 00918
PO Box 19900 San Juan Puerto Rico 00910-1900
Tel. (787) 724-7100 Fax (787)725-2150
http://www.ce.pr.gov

Renewal of the license by the Council of Higher Education (PREC) of Puerto Rico was extended to cover the following programs:

<table>
<thead>
<tr>
<th>Bachelor Programs</th>
<th>Date of Renewal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. BBA in Industrial Management (postponed)</td>
<td>April 2008</td>
</tr>
<tr>
<td>2. BBA Management in Information systems (postponed)</td>
<td>April 2008</td>
</tr>
<tr>
<td>3. BBA in Finance (postponed)</td>
<td>August 2005</td>
</tr>
<tr>
<td>4. BS in Computer Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>5. BS in Computer Science</td>
<td>September 2009</td>
</tr>
<tr>
<td>6. BS in Land Surveying and Mapping</td>
<td>September 2009</td>
</tr>
<tr>
<td>7. BS in Civil Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>8. BS in Industrial Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>9. BS in Electrical Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>10. BS in Electrical Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>11. BS in Mechanical Engineering with specialization in Aerospace</td>
<td>September 2009</td>
</tr>
<tr>
<td>12. BBA Construction Management</td>
<td>September 2009</td>
</tr>
<tr>
<td>13. Bachelor of Architecture</td>
<td>September 2009</td>
</tr>
<tr>
<td>14. BS in Environmental Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>15. BS in Chemical Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>16. BBA General Management</td>
<td>September 2009</td>
</tr>
<tr>
<td>17. BBA Marketing</td>
<td>September 2009</td>
</tr>
<tr>
<td>18. BBA Accounting</td>
<td>September 2009</td>
</tr>
<tr>
<td>Master Programs</td>
<td>Date of Renewal</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Master in Landscape Architecture</td>
<td>September 2009</td>
</tr>
<tr>
<td>Master of Science in Computer Sciences</td>
<td>September 2009</td>
</tr>
<tr>
<td>Master in Computer Sciences</td>
<td>September 2009</td>
</tr>
<tr>
<td>MS in Computer Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>Master of Engineering in Computer Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>MBA (International Enterprise)</td>
<td>September 2009</td>
</tr>
<tr>
<td>MS in Electrical Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>Master of Engineering in Electrical Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>MBA (General and Interdisciplinary)</td>
<td>September 2009</td>
</tr>
<tr>
<td>MBA in computer Information Systems (E-Commerce &amp; Data Base)</td>
<td>September 2009</td>
</tr>
<tr>
<td>Master in Engineering Management</td>
<td>September 2009</td>
</tr>
<tr>
<td>MS in Civil Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>MS in Manufacturing Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>MS in Manufacturing Competitiveness</td>
<td>September 2009</td>
</tr>
<tr>
<td>Master of Engineering in Civil Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>Master of Engineering in Manufacturing Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>Master in Manufacturing Competitiveness</td>
<td>September 2009</td>
</tr>
<tr>
<td>MBA in Management of Technology (postponed)</td>
<td>December 2001</td>
</tr>
<tr>
<td>Master in Environmental Management</td>
<td>September 2009</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Online Programs</th>
<th>Date of Renewal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Engineering Management</td>
<td>September 2009</td>
</tr>
<tr>
<td>MS in Manufacturing Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>MS in Manufacturing Competitiveness</td>
<td>September 2009</td>
</tr>
<tr>
<td>Master of Engineering in Manufacturing Engineering</td>
<td>September 2009</td>
</tr>
<tr>
<td>Master in Manufacturing Competitiveness</td>
<td>September 2009</td>
</tr>
<tr>
<td>MBA in Computer Information Systems</td>
<td>September 2009</td>
</tr>
</tbody>
</table>
B. Middle States Commission on Higher Education (MSCHE)

3624 Market Street, 2nd Floor West, Philadelphia, PA 19104
Telephone: (267) 284–5000 Fax (215) 662–5501
E-mail: info@msche.org Spanish: españolinfo@msche.org

Accreditation was reaffirmed in 2005 by the Commission on Higher Education of MSACS. A Periodic Review Report was submitted in June 1, 2010. MSCHE reaffirmed accreditation and commended the Institution for the quality of the Periodic Review Report and the process on letter dated November 19, 2010. The next self-study Evaluation will be performed during the academic year 2014–2015.

C. Accreditation Board for Engineering and Technology (ABET)

111 Market Place, Ste. 1050, Baltimore, MD 21202–4012
Phone 410-347-7700 Fax: 410-625-2238
http://www.abet.org

The following programs were accredited by ABET in 2008. Year in parenthesis indicates the year of the first accreditation.

- Bachelor of Science (BS) in Chemical Engineering (2006)
- Bachelor of Science (BS) in Civil Engineering (1996)
- Bachelor of Science (BS) in Industrial Engineering (1996)
- Bachelor of Science in Computer Engineering (2006)
- Bachelor of Science (BS) in Electrical Engineering (1996)
- Bachelor of Science in Environmental Engineering (2002)
- Bachelor of Science (BS) in Mechanical Engineering (1996)

D. The following program was accredited by the Applied Science Accreditation Commission of ABET. (same address as above)

- Bachelor of Science in Land Surveying and Mapping (BS) (2006)
E. National Architectural Accrediting Board (NAAB)
1101 Connecticut Avenue, NW, Suite 410, Washington, DC 20036
info@naab.org

In the year 2000, NAAB accredited the Bachelor of Architecture for the first time and was reaccredited in

F. International Assembly for Collegiate Business Education (IACBE)
11374 Strang Line Road
Lenexa, Kansas 66215, USA
P.O. Box 3960; Olathe, KS 66063, USA.
Phone: (913) 631-3009 Fax: (913) 631-9154
http://iacbe.org/

Accredited the Bachelor’s and Master’s degree programs offered by the School of Management for the first time in 2006.

G. Landscape Architectural Accreditation Board (LAAB)
636 Eye Street, NW
Washington DC 20001-3736
Telephone: (202) 898-2444
Toll free No. (888) 999-ASLA (2752)
Fax: (202) 898-1185
Email: info@asla.org

On March 13, 2012 – LAAB informed the accreditation of Master’s degree in Landscape Architecture effective the Spring of 2011 to June 30, 2017, subject to review of a satisfactory progress report to be submitted by July 1, 2014.
3. DEFINITION OF TERMS ADOPTED

The following set of definitions of terms was adopted by Polytechnic University of Puerto Rico.

1. **Assessment**: Collecting data in the context of conducting measurement with the purpose of: a) improving, b) proving, and c) informing.

2. **Assessment Process**: one or more processes that are used for the following purposes:
   1. Development and improvement of the program (curriculum) and
   2. Confirmation that each student achieves the program expected outcomes before certification for graduation.

3. **Benchmark**: the best at doing something, “best in class.” A benchmark engineering department would be one that is doing the best job at something. The “something” must be identified first, since the benchmark department for producing graduates who communicate best may not be the same one that produces graduates who are the best researchers, for example. Benchmark departments or institutions are those that we seek to emulate.

4. **Constituency**: a group of people with common expectations of an educational program.

5. **Criterion**: [when used with respect to a state, regional or national (e.g., ABET, NAAB, IACBE, or MSACS) accrediting agency]- A criterion is the term used to denote one of the formal set of statements of what is required in order for an educational program to be accredited. Taken collectively, the agency’s accreditation criteria are the requirements for accreditation.

6. **Data collection method**: Process used to collect evidence of outcomes.

7. **Environment**: the student’s actual experiences during the educational program. It includes those things that the educator and the institution directly control in order to develop the student’s talents.
8. **Evaluation:** one or more processes that are used to determine if the Program Educational Objectives are being achieved and to improve the effectiveness of the program.

9. **Goal:** a general statement of an expected and programmed achievement. For example, a goal for an undergraduate engineering program might be the ability to analyze and solve technical problems. A statement describing the broad outcome desired within a relatively long period of time.

10. **Indicator or standard and acknowledged basis for comparing measuring:** a defined variable, a defined degree or level of requirement, excellence, or attainment. For example, an indicator of excellence might be the percent of graduates who pass the Fundamentals of Engineering examination. Another indicator might be the percentage of graduating students who can present, explain, and defend a final design project in a professional way before a board of three or more working experts in the field.

11. **Inputs:** those personal qualities the student brings initially to the educational program, including the student’s initial level of developed talent at the time of entry and all the other resources made available to him by the institution for his education.

12. **Learning objectives:** statements describing knowledge, skills, attitudes and values students are expected to acquire. These objectives can be very general or very specific, but they must 1) express mastery of one or more topics contained within a single course, 2) be linked to the program outcome in such a way that student achievement of one or more of them demonstrates satisfaction of a single program outcome.

13. **Mission Statement:** the mission of an organization is a clearly stated goal(s) that tells what the organization intends to accomplish or do. A properly crafted mission statement is the starting point for developing a vision for accomplishing the goal(s). The mission statements should
contain words like “will” and “for” to tell the readers what the organization intends to do.

14. **Objective:** a specific statement that derives from the goal that describes the desired change. For example, regarding the goal mentioned in 9 above, an objective might be the ability to find three or more technically feasible solutions when presented with a real-life problem in the student’s engineering major. This statement describes the expected accomplishment of graduates during the first few years after graduation.

15. **Outcome:** the result of an activity such as an educational experience. The outcomes of a college education are the total sum of all knowledge, skills, attitudes and values developed over the years of the undergraduate experience, both inside and outside of classroom, that is, the talents Polytechnic University of Puerto Rico is trying to develop, through its educational programs, in the students. The outcome statements describe what students are expected to know and be able to do by the time of graduation.

16. **Performance criterion:** specific statement, specially a quantitative one, identifying the performance required to meet the objective. The performance must be confirmable through measurable evidence. Objectives may have multiple performance criteria.

17. **Program Educational Objectives:** broad, general statements describing how a program will satisfy its constituency and to fulfill its educational mission. There are two types of Program Educational Objectives—those that all graduates are expected to accomplish and those that some, but not all, graduates are expected to accomplish. The evaluation of program educational objective statements is performed by external constituencies such as employers, prospective students, student sponsors and alumni.

18. **Program Outcomes more specific:** statements of program graduates knowledge, skills and attitudes that serve as evidence of achievement of the program educational objectives. Achievement of all of the program
outcomes should indicate the graduate is equipped to successfully execute the Program Educational Objectives. Achievement of Program Outcomes by each student should be verified before certification for graduation. The Program Outcomes must embrace the requirements of the corresponding accrediting agency. This should not require “restatement” of those. It is sufficient to demonstrate that achievement of the Program Outcomes assures compliance with the required ones.

19. **Strategic objective:** statement that describes the expected outcomes of the strategic plan.

20. **Strategic plan:** is a five year framework for carrying out strategic thinking, direction, and action leading to the achievement of consistent and planned results. It consists of seven distinct elements as follows: a) *Organizational mission* – which constitutes the foundation for all other elements of the strategic plan; b) *Strategic Analysis* – an analysis of both the internal and external factors that are likely to have the greatest impact on the future to the organization; c) *Strategy* – after identification and prioritization of critical issues that are addressed in the strategic plan, the organization chooses the strategic direction to go for resolving the critical issues (answering the questions, why?), the strategy is defined to answer the question: Where does the organization want to go?; d) *Long term objectives* – are chosen to support a given strategy, answering the questions when and how the organization go about achieving its strategies; e) *Integrated programs* – integrated programs refers to the interface of strategic (long - term) planning and operational (short-term) planning; f) *Financial Projections* – summarize the planned revenues and costs associated with all the other elements of the strategic plan; and g) *Executive Summary* – all the elements of the strategic plan need to be distilled into a single document that serves as a “blueprint” to follow as the strategic plan is implemented.
21. **Vision Statement:** tells how the organization will accomplish its mission. The vision for an organization is an ideal future reality as created in the mind of the leader. The leader’s vision must be compatible with the organization’s mission. The vision statements should contain words like “by” and “through” to tell how the mission will be accomplished.
4. **MISSION, VISION, PRINCIPLES/VALUES AND THEIR IMPLICATIONS, AND GOALS**

In 1996, PUPR President appointed a team to develop a strategic plan for the next ten years. The team members were the Vice Presidents, Deans, Academic Department Heads, Director of the Library, the Registrar, Director of Planning and Institutional Research and the Director of the Retention Program. The PUPR President presided the effort and retained a consultant to advise the team. In October of 1996 the team presented a draft of the Strategic Plan 1996–2006 to the Administrative Board for its recommendation to the Board of Trustees who finally approved it. Copy of the document was mailed to the CHEPR and the MSACS. The document contained the Mission, vision and strategic objectives statements.

In May, 1999 the School of Engineering organized 14 committees in preparation for the arrival of the ABET visiting team in the fall of 2001. One of the Committees-Strategic Planning and Financial Resources revised the Strategic Plan and issued the final report, after approval by the Board of Trustees, in August, 2002 for the period 2002–2007. Early in 2003 the President appointed a Strategic Planning Permanent Committee whose first assignment was to revise the 2002–2007 Strategic Plan. This Committee rendered its report in March, 2004 – Institutional Strategic Plan 2004–2009. This plan was ratified by the Administrative Board and the Board of Trustees during the Spring Term of 2004.

On the other hand, with the Catalog 1985-89, PUPR had initiated an effort to define with precision the philosophy and institutional mission. In that case the principle of accessibility (flexible admission and flexible schedules) and the principle of adaptability (community-based education) were postulated. In the Catalog 1990-1995 these principles were expanded and new ones were adopted. For that reason sections about Education External Reality, Admission policy, Educational Governance and The Curriculum and its specific objectives
were incorporated. In the undergraduate Catalog 1995-1998, the principles and philosophy already defined were essentially retained unchanged. In the undergraduate Catalog 2000-2003 a new section –Goals– was added, keeping the above mentioned sections unaltered; these goals were essentially in alignment with the mission, and the principles and philosophy previously defined. These goals were incorporated in the strategic plan 2002-2007. The revised goals of the strategic Plan 2004–2009 were incorporated in its 2008–2012 undergraduate and graduate Catalogs. During the second half of the calendar year 2009, the Institutional Strategic Plan Committee revised the Institutional Strategic Plan. The same was finally approved by the Board of Trustees effective January 1, 2010.

4.1 MISSION
As an institution of higher education, Polytechnic University of Puerto Rico provides opportunities for individuals from diverse backgrounds in different locations using multiple methods of delivery to cultivate their potential for leadership, productivity and competitiveness with the purpose of providing greater social responsibility toward their communities, through exposure to intellectual, humanistic and technological advancement.

4.2 VISION
Polytechnic University of Puerto Rico envisions accomplishing its mission and be recognized as the leading Hispanic Serving Institution in multiple fields of study, meeting societal, industrial and educational standards in general, in association with public and private enterprises; characterized by an emphatic relationship between faculty and students, and with a culture of client-oriented quality service, empowerment and teamwork.

PUPR operates in an environment pervaded by the two cultures of the Americas, thus it is well positioned to interact with the Hispanic and the Anglo worlds.
inside and outside its geographical borders by providing a technical, cultural and linguistic intermediary link.

4.3 PRINCIPLES/VALUES

Polytechnic University of Puerto Rico adopts the following principles or values as part of its philosophy and institutional mission:

1. Polytechnic University of Puerto Rico believes that every human being, regardless of his/her ethnic origin, disability, age, race, political or religious affiliation, gender, economic or social status or for any other reason considered unlawful has the inalienable right to develop his/her potential to its maximum. It recognizes education as a universal right that should be limited only by the inherent capacity of each learner.

2. Polytechnic University of Puerto Rico conceives education as a process that permeates the entire life of a human being. Chronological age, within the obvious limits that life itself imposes to every human being should not constitute a valid criterion for admission or rejection of a student to the University. It recognizes and stimulates the development of the ability to engage in life-long learning.

3. Polytechnic University of Puerto Rico maintains that the development of professional knowledge and technical skills includes an understanding of general culture. The development of a professional who is competent in his/her specialized field includes the development of humanistic appreciation and a sense of social responsibility.

4. Polytechnic University of Puerto Rico will be a university that is a vital resource in applying and creating knowledge to help address the critical problems of 21st century; improving economic competitiveness and the quality of life for Puerto Rico, the United States of America and the world.

5. Polytechnic University of Puerto Rico emphasizes to the students, faculty members and administration personnel the fact that an educated person
should always behave according to the applicable professional codes of ethics.

4.4 IMPLICATIONS OF THE PRINCIPLES (EDUCATION AND EXTERNAL REALITY)

Polytechnic University of Puerto Rico accepts the challenge imposed by rapid social and technological change. Moreover, it accepts the fact that traditional university education has often been characterized by its alienation from the real world. It recognizes that the most common criticism made by industry representatives to those who have completed their undergraduate studies is that graduates do not seem to be capable of operating effectively in a changing world. To face this fact, taking place at other institutions and to inoculate ourselves from this malady, Polytechnic University of Puerto Rico adopts the following specific objectives:

- Provide students with direct experience in the real and changing world of modern technology and industry.
- Introduce students to the great laboratory of Puerto Rican industry so that they can relate to their future environment and with today’s most advanced technology.
- Recruit experienced professors who are actively working in the fields of Engineering, Architecture, Land Surveying and Mapping, and Business Administration aware of the problems caused by an ever changing technology.

4.5 IMPLICATIONS OF THE PRINCIPLES (ADMISSIONS POLICY)

In accordance with the principles stated above, Polytechnic University of Puerto Rico has adopted a policy of admissions in order to grant entrance to students from diverse backgrounds, such as:
• Highly talented high school graduate students who, for socio-cultural and economic reasons, denote academic deficiencies and require remedial or developmental courses.

• Individuals who, for different reasons, could not complete a Bachelor’s Degree in Engineering, Architecture, Land Surveying and Mapping, or Business Administration after having previously enrolled in the mentioned programs at other universities.

• 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.

4.6 Teaching Goals Inventory (TGI) Self-Scorable Version

4.6-A Teaching Goals Inventory, Self Scorable Version

4.6-B Evaluation of Level of Achievement in Class of each one of the Goals in the Teaching Goals Inventory

4.6-C Evaluation of Achievement in Class of each one of the Goals in the TGI by Students

5. POLICIES

To effectively serve this varied student population, Polytechnic University of Puerto Rico has adopted the following policies:

- Offers all its programs from 8:00a.m. to 10:30pm, Monday through Thursday; Friday and Saturday from 7:00am to 5:00pm so that students can study and work if they so desire. Two two-hour contact periods are assigned to every three credit-hour course.
- Runs a developmental and tutorial component of preparatory courses in languages, science, and mathematics to help students overcome their academic deficiencies, if any, from high school.
- Follows an academic and admissions calendar on the basis of three twelve week periods, called trimesters, with 48 contact hours. Defined the fulltime student as one who enrolls in a minimum of twelve credit-hours per term. Additionally, the student may enroll in and about six to nine credit-hours in the summer session, whenever they are offered, if he/she so desires. One credit-hour, equivalent to 15 contact hours, corresponds to the semester credit-hour.
- Provide specialized services such as academic and personal counseling, as well as financial assistance, to help students benefit more from the university life.

The curriculum adopted for each program will consist of nine components, each with its own specific objectives as outlined in the Table 5.1. In summary, Polytechnic University of Puerto Rico seeks to develop highly qualified professionals with an understanding of general culture and with a sense of social responsibility. We strive to maintain the academic excellence that must characterize modern scientific and technological universities and to incorporate in its administrative structure and academic processes all the techniques that will enable our graduates to face successfully the dynamic and changing world.
## 5.1 THE CURRICULUM AND ITS SPECIFIC OBJECTIVES

Polytechnic University of Puerto Rico has structured each program in nine (9) fundamental components, each with its own specific objectives:

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>OBJECTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Development Component consists of preparatory courses and tutoring in English, Spanish, Science, and Mathematics.</td>
<td>1.1 To enable students who reflect deficiencies in these disciplines to overcome them to continue college studies</td>
</tr>
</tbody>
</table>
| 2. General Studies Component includes the areas related to languages and socio-humanistic disciplines. | 2.1 To develop an understanding of general culture broadly and deeply.  
2.2 To develop linguistic skills in Spanish and in English.  
2.3 To develop and master the three forms of thinking: logical, inductive, and deductive and learn to think creatively, critically, intuitively, objectively, and positively. |
<p>| 3. Science and Mathematics Component include all required courses in the basic sciences and mathematics. | 3.1 To enable students to grasp basic concepts in science and mathematics, and to develop scientific thinking skills that are usually acquired through the systematic study of these disciplines |
| 4. Core Component of Each Program Includes general pre-specialization courses required of all students regardless of their program specialized field. | 4.1 To train students in the basic concepts of the engineering, surveying, architecture or business disciplines before they begin specialized studies. |
| 5. Computer Science Component Includes all courses related to computers. | 5.1 To provide students with the necessary knowledge and skills in the use of computers and their applications in their respective specialized fields |
| 6. Specialization Component Includes all courses specifically related to each specialized field. | 6.1 To provide students with knowledge and skills that will enable them to achieve success in their specialized fields. |</p>
<table>
<thead>
<tr>
<th></th>
<th><strong>Electives Component</strong></th>
<th><strong>Laboratory Experiences and Practice Component</strong></th>
<th><strong>Capstone Design Component</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>To provide students with additional knowledge in their specialized field or to broaden their general knowledge by exploring new fields.</td>
<td>To expose students to practical experiences that will complement their theoretical education.</td>
<td>To provide engineering, land surveying and architecture, as well as management students with the opportunity to use and integrate the knowledge and skills acquired throughout their academic experience in the development of a major design project.</td>
</tr>
</tbody>
</table>
5.2 INSTITUTIONAL STRATEGIC PLAN 2010 – 2015

The Institutional Strategic Plan 2010 – 2015 PUPR’s new plan, articulates a planning process for the Polytechnic University of Puerto Rico. The institutional goals, strategic areas and categories set forth in the plan indicate the direction the University will take to maintain and enhance excellence in all of its activities.

The Plan published in a separate, standing alone document.
## 5.3 GOALS AND OBJECTIVES

The Institutional Strategic Plan for the period January 1, 2010 – 2015 defines the goals and objectives as follows.

### Planning Objectives for Goals (Dates are presented in quarters (Q))

<table>
<thead>
<tr>
<th>No</th>
<th>Goal 1: Increase the recruitment of talented and underrepresented students</th>
<th>Owners</th>
<th>Time Frame</th>
<th>Estimated Cost (Budget)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Define criteria to identify talented students.</td>
<td>Retention Committee</td>
<td>Q4/2009</td>
<td>None</td>
</tr>
<tr>
<td>1.2</td>
<td>Define criteria to identify underrepresented students</td>
<td>Gradate School Dean</td>
<td>Q1-4/2011</td>
<td>$2,000</td>
</tr>
<tr>
<td>1.3</td>
<td>Carry out promotion trips within the Caribbean basin</td>
<td>Graduate School Dean</td>
<td>Q1-2/2010</td>
<td>$5,000</td>
</tr>
<tr>
<td>1.4</td>
<td>Implement a bridge program similar to CROEM</td>
<td>Deans</td>
<td>Q1-4/2010</td>
<td>$2,500</td>
</tr>
<tr>
<td>1.5</td>
<td>Establish training programs and techno-science curricula for feeder high schools</td>
<td>Deans</td>
<td>Q1-4/2010</td>
<td>$2,500</td>
</tr>
<tr>
<td>1.6</td>
<td>Increase female recruitment within the student population</td>
<td>Department Heads</td>
<td>2010-2015</td>
<td>None</td>
</tr>
<tr>
<td>1.8</td>
<td>Develop a scholarship program for high IGS students</td>
<td>Deans</td>
<td>Q1-4/2011</td>
<td>$15,000</td>
</tr>
<tr>
<td>1.9</td>
<td>Develop partnerships with socio-economically disadvantaged communities</td>
<td>Deans</td>
<td>Q1-4/2011-2015</td>
<td>None</td>
</tr>
<tr>
<td>1.10</td>
<td>Increase the number of participants in the Pre-engineering and Geomatic Sciences’ summer program for high school students</td>
<td>Deans</td>
<td>Q1-4/2010-2015</td>
<td>None</td>
</tr>
<tr>
<td>1.11</td>
<td>Establish and Promote Research and Teaching Assistantships</td>
<td>Deans</td>
<td>Q1-4/2010-2015</td>
<td>$30,000</td>
</tr>
<tr>
<td>1.12</td>
<td>Establish an advisory board of High-School Principals</td>
<td>Deans</td>
<td>Q1-4/2010-2015</td>
<td>$1,000</td>
</tr>
</tbody>
</table>
### Planning Objectives for Goals (CONT’)

<table>
<thead>
<tr>
<th>No</th>
<th>Goal 2: Increase the retention, persistence, and graduation rates of students</th>
<th>Owners</th>
<th>Time Frame</th>
<th>Estimated Cost (Budget)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Define and Implement an Institutional Retention Model</td>
<td>Retention Committee</td>
<td>Q4/2009</td>
<td>$30,000</td>
</tr>
<tr>
<td>2.2</td>
<td>Increase the Participation of Counselors and Tutors in the Retention Model</td>
<td>Q1-4/2010-2015</td>
<td>$45,000</td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>Develop an Outreach Program to minimize the amount of Developmental courses to start program</td>
<td>Deans</td>
<td>Q1-2/2010</td>
<td>$10,000</td>
</tr>
<tr>
<td>2.4</td>
<td>Develop and Implement a model for Student early engagement to academic programs and extracurricular activities</td>
<td>Dept. Head of Civil and Environment Engineering</td>
<td>Q1-2/2010</td>
<td>$1,000</td>
</tr>
<tr>
<td>2.5</td>
<td>Standardize Counselors, tutors, and mentors services (need online registration)</td>
<td>Blanca Tallaj, Sandra Ordoñez, Isabel Lorenzana</td>
<td>Q1-4/2010</td>
<td>$2,500</td>
</tr>
<tr>
<td>2.6</td>
<td>Involve Relatives in supporting Student through achievement academic</td>
<td>Retention Committee</td>
<td>Q1-4/2010</td>
<td>None</td>
</tr>
<tr>
<td>2.7</td>
<td>Improve the Developmental Courses Service and Assessment Model</td>
<td>Dean of Arts and Sciences</td>
<td>Q1-4/2011</td>
<td>$1,500</td>
</tr>
</tbody>
</table>

### Planning Objectives for Goals (CONT’)

<table>
<thead>
<tr>
<th>No</th>
<th>Goal 3: Improve integration with society</th>
<th>Owners</th>
<th>Time Frame</th>
<th>Estimated Cost (Budget)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Develop partnerships with socio-economically disadvantaged communities</td>
<td>Deans</td>
<td>Q1-4/2010-2015</td>
<td>$1,500</td>
</tr>
<tr>
<td>3.2</td>
<td>Increase community service Capstone projects ensuring that a multidisciplinary approach is adopted</td>
<td>Othoniel Rodriguez</td>
<td>Q1-4/2010-2015</td>
<td>None</td>
</tr>
<tr>
<td>3.3</td>
<td>Create and recruit a public relations role within the engineering school to Promote community service capabilities and accomplishments</td>
<td>Deans – Ana M. Dapena</td>
<td>Q4/2009</td>
<td>$1,500</td>
</tr>
<tr>
<td>3.4</td>
<td>Established collaborative projects with government agencies</td>
<td>Angel Gonzalez</td>
<td>Q4/2009, Q1-4/2010</td>
<td>None</td>
</tr>
<tr>
<td>No</td>
<td>Goal 4: Develop organizational structures, processes, and infrastructure to support high quality education</td>
<td>Owners</td>
<td>Time Frame</td>
<td>Estimated Cost (Budget)</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>--------</td>
<td>------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>3.5</td>
<td>Establish partnerships with private enterprises to finance public service projects</td>
<td>Deans Ana M. Dapena</td>
<td>Q1-4/2010</td>
<td>None</td>
</tr>
<tr>
<td>3.6</td>
<td>Organize educational community events (such as conferences, speeches, and workshops)</td>
<td>Marisol Rodriguez</td>
<td>Q1-4/2010-2015</td>
<td>$3,000</td>
</tr>
<tr>
<td>3.7</td>
<td>Collaborate with other schools to promote community service projects</td>
<td>Othoniel Rodriguez</td>
<td>Q1-4/2010-2015</td>
<td>None</td>
</tr>
<tr>
<td>3.8</td>
<td>Assess the impact of PUPR on its surroundings communities and develop an action plan for continuous improvement</td>
<td>Deans</td>
<td>Q2-3/2010</td>
<td>$1,000</td>
</tr>
</tbody>
</table>

Planning Objectives for Goals (CONT’)

<table>
<thead>
<tr>
<th>No</th>
<th>Goal 4: Develop organizational structures, processes, and infrastructure to support high quality education</th>
<th>Owners</th>
<th>Time Frame</th>
<th>Estimated Cost (Budget)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Conduct a benchmark study to identify and Implement technologies to enhance the educational process and to periodically review emerging trends</td>
<td>Amado Velez, Gustavo Pacheco, Pedro Perez, E-Learning Director</td>
<td>Q2/2010</td>
<td>$1,000</td>
</tr>
<tr>
<td>4.2</td>
<td>Educate faculty and supporting staff in the adopted technologies</td>
<td>Amado Velez, Gustavo Pacheco, Pedro Perez</td>
<td>Done</td>
<td>$5,000</td>
</tr>
<tr>
<td>4.3</td>
<td>Clarify the interaction and technology support between the San Juan, Miami, and Orlando Campuses</td>
<td>Jose O. Rivera, Auristela Mueses</td>
<td>Q1-4/2010</td>
<td>None</td>
</tr>
<tr>
<td>4.4</td>
<td>Conduct an evaluation of the current use of resources to build a plan for their efficient reallocation as needed.</td>
<td>Deans</td>
<td>Q3-4/2010</td>
<td>None</td>
</tr>
<tr>
<td>4.5</td>
<td>Develop a plan to integrate in the curricula information and search skills using high computer literacy</td>
<td>Director E-Learning</td>
<td>Q2-4/2010</td>
<td>None</td>
</tr>
<tr>
<td>4.6</td>
<td>Conduct an evaluation of the existing academic support services to identify gaps and implement improvements</td>
<td>Carlos Alvarado</td>
<td>Q4/2009</td>
<td>$1,500</td>
</tr>
<tr>
<td>4.7</td>
<td>Develop and implement an evaluation system to create, maintain, and improve academic programs; with emphasis on outcomes assessment at the institutional and program levels to comply with the requirements of the accreditation agencies</td>
<td>Deans</td>
<td>Q1-4/2010</td>
<td>None</td>
</tr>
</tbody>
</table>
## Planning Objectives for Goals (CONT’)

<table>
<thead>
<tr>
<th>No</th>
<th>Goal 5: Recruit, retain, promote, and compensate faculty members who significantly contribute to the institutional development</th>
<th>Owners</th>
<th>Time Frame</th>
<th>Estimated Cost (Budget)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Develop and Implement a new evaluation and promotion criteria for faculty</td>
<td>Dean Carlos Alvarado Othoniel Rodriguez</td>
<td>Q4/2009</td>
<td>None</td>
</tr>
<tr>
<td>5.2</td>
<td>Establish tenure-track (or rolling limited year contract)</td>
<td>Human Resources Deans</td>
<td>Q1/2011</td>
<td>None</td>
</tr>
<tr>
<td>5.3</td>
<td>Match or exceed salary scales as compared to the other private non-for profit engineering academic institution in Puerto Rico for faculty and administrative roles</td>
<td>Human Resources Deans</td>
<td>Q3–Q4/2010</td>
<td>TBE</td>
</tr>
<tr>
<td>5.4</td>
<td>Develop and Establish a Communication Plan detailing the financial performance metrics system by department and by academic program</td>
<td>VP financial Resources–Deans</td>
<td>Q3–Q4/2009</td>
<td>None</td>
</tr>
<tr>
<td>5.5</td>
<td>Develop an academic personnel committee (peers committee (peers committee) to establish policies for recognition and faculty advancement</td>
<td>Deans Carlos Alvarado</td>
<td>Q2–Q4/2010</td>
<td>None</td>
</tr>
<tr>
<td>5.6</td>
<td>Improve and Standardize the faculty recruitment process</td>
<td>Deans Human Resources</td>
<td>Q3–Q4/2010</td>
<td>None</td>
</tr>
</tbody>
</table>
### Planning Objectives for Goals (CONT’)

<table>
<thead>
<tr>
<th>No</th>
<th>Goal 6: Encourage and develop graduate and undergraduate research with emphasis on energy and the environment</th>
<th>Owners</th>
<th>Time Frame</th>
<th>Estimated Cost (Budget)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Develop a research center with focus on alternative energy, energy conservation and sustainability</td>
<td>Angel Gonzalez</td>
<td>Q2-4/2010</td>
<td>None</td>
</tr>
<tr>
<td>6.2</td>
<td>Increase course offerings related to energy and environment</td>
<td>Deans</td>
<td>Q1-4/2011-2015</td>
<td>$3,000</td>
</tr>
<tr>
<td>6.3</td>
<td>Promote interdisciplinary Capstone Design Projects related to energy and environment</td>
<td>Deans</td>
<td>Q1-4/2011-2015</td>
<td>None</td>
</tr>
<tr>
<td>6.4</td>
<td>Establish TA’s and RA’s programs</td>
<td>Graduate Dean</td>
<td></td>
<td>$30,000</td>
</tr>
<tr>
<td>6.5</td>
<td>Prioritize the recruitment and the development of Faculty in the areas related to energy and environment</td>
<td>Deans</td>
<td>Q2-4/2010-2015</td>
<td>None</td>
</tr>
<tr>
<td>6.6</td>
<td>Promote alliances with other research institutions and funding agencies</td>
<td>H. Kettani, Angel Gonzalez</td>
<td>Q1-4/2010-2015</td>
<td>$3,000</td>
</tr>
<tr>
<td>6.7</td>
<td>Develop a business incubator center fostering alternative energy, energy conservation and sustainability</td>
<td>Business Dean, Angel Gonzalez</td>
<td>Q1-4/2011</td>
<td>$15,000</td>
</tr>
<tr>
<td>6.8</td>
<td>Develop a proposal to become an exemplary academic institution in best energy conservation practices</td>
<td>Carlos Alvarado, Joshipura</td>
<td>Q1-4/2009</td>
<td>$50,000</td>
</tr>
</tbody>
</table>
PART II

THE CONCEPTUAL FRAMEWORK OF ASSESSMENT

1. Assessment Level of Implementation and Measures
2. Licensing, Accreditation and Award, Agencies Processes
   2.1 Puerto Rico Education Council (PREC) Licensing Process
   2.2 Middle States Commission on Higher Education Accreditation process (MSCHE)
   2.3 National Architectural Accrediting Board Accreditation Process (NAAB)
   2.4 The Accreditation Board for Engineering and Technology Accreditation Process (ABET)
   2.5 Applied Science Accreditation Commission (ASAC)
   2.6 International Assembly for Collegiate Business Education (IACBE) Accreditation Process
   2.7 Landscape Architectural Accreditation Board (LAAB) Accreditation Process
   2.8 Baldrige National Quality Program (Education Criteria for Performance Excellence)
3. Project Evaluation Processes
1. ASSESSMENT LEVEL OF IMPLEMENTATION AND MEASURES

The level of implementation of the Outcomes Assessment corresponding to each one of the academic programs is judged using the matrix shown in Table I. Five levels of progress or depth achieved are defined. The parameters under assessment are:

a. *Program Educational Objectives* have been established and maintained.

b. *Constituents* are involved in helping set program objectives and in evaluating the level to which they are being achieved.

c. The required *processes* are operational.

d. Outcomes *Assessment* is being practiced.

e. Results of Outcomes and the various processes are being used to improve programs and assure objectives are being achieved.

f. An overall *system* is in place to meet the accreditation requirements.

The objective is to reach level 5 in all six parameters by the next program evaluation cycle.

A set of eleven different methods to collect data to conduct the assessment of each one of the defined outcomes is provided in Table II. At least three of the methods are needed to confirm the validity of the assessment made of every outcome. From Table II it is easily observed that all the eleven outcomes may be assessed with, at least three primary assessment measures.

A list of some important Outcomes Indicators Standards or Performance Criteria is provided at the end of Part III, Section 6.
## Matrix for Implementation of Assessment

**Table I**

<table>
<thead>
<tr>
<th>LEVEL OF IMPLEMENTATION</th>
<th>EDUCATIONAL OBJECTIVES</th>
<th>CONSTITUENTS</th>
<th>PROCESSES</th>
<th>OUTCOMES ASSESSMENT</th>
<th>RESULTS</th>
<th>SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not well defined</td>
<td>Informal contact</td>
<td>Few, if any processes defined and documented</td>
<td>Limited to ad hoc efforts</td>
<td>Anecdotal</td>
<td>None evident</td>
</tr>
<tr>
<td>2</td>
<td>Broadly defined and documented; clearly tied to mission; evidence of constituent input</td>
<td>Somewhat involved in defining objectives and desired outcomes, and assessment</td>
<td>Some major processes defined and documented; clearly tied to mission and program objectives</td>
<td>Some Outcomes defined and improved in systematic manner; problems recognized and corrected</td>
<td>Satisfactory outcomes; some evidence of positive trends in areas deployed</td>
<td>Early stages; partial deployment within the program and college</td>
</tr>
<tr>
<td>3</td>
<td>Comprehensive; defined, documented and measurable; clearly tied to mission and constituent needs</td>
<td>Clearly involved in defining objectives and desired outcomes, and assessment; evidence of some sustained strategic partnerships</td>
<td>Processes for all major elements of criteria defined, documented, and controlled; clearly tied to mission, program objectives, and constituent needs</td>
<td>All major outcomes defined; systematic evaluation and process improvement in place; problems anticipated and prevented</td>
<td>Good outcomes; positive trends in several major areas; some evidence that results caused by systematic approach</td>
<td>In place; deployed throughout the program and college; driven by mission and objectives</td>
</tr>
<tr>
<td>4</td>
<td>Comprehensive; defined, documented and measurable; clearly tied to mission; responsive to constituent needs; systematically reviewed and updated</td>
<td>High degree of involvement in defining objectives and desired outcomes; evidence of many sustained strategic partnerships in all constituent groups</td>
<td>Processes for all elements of criteria are quantitatively understood and controlled; clearly tied to mission, program objectives, and constituent needs</td>
<td>All outcomes defined; systematic evaluation and process improvement in place; many support areas involved; sources of problems understood and eliminated</td>
<td>Excellent outcomes; positive trends in most areas; evidence that results caused by systematic approach</td>
<td>Integrated; deployed throughout the program, college, and support areas; driven by mission and objectives</td>
</tr>
<tr>
<td>5</td>
<td>Comprehensive; defined documented, measurable and flexible; clearly tied to mission; readily adaptable to meet constituent needs; systematically reviewed and updated</td>
<td>High degree of involvement in defining objectives and desired outcomes, assessment; and improvement cycles; sustained evidence of strategic partnership with all key constituents</td>
<td>Processes for all elements of criteria are quantitatively understood and controlled; clearly tied to mission, program objectives, and constituent needs; seen as benchmarks by other institutions</td>
<td>All outcomes defined; systematic evaluation and process improvement in place; all support areas involved; common sources of problems understood and eliminated</td>
<td>World-class outcomes; sustained results; results clearly caused by systematic approach</td>
<td>Sound, highly integrated system deployed throughout the program, college, and institution; driven by mission and objectives</td>
</tr>
</tbody>
</table>
## TABLE II
POLYTECHNIC UNIVERSITY OF PUERTO RICO
ASSESSMENT MEASURES

Legend:
(1) Denotes a primary or direct (D) assessment measure – option whenever possible
(2) Denotes secondary or indirect assessment measure – alternate

<table>
<thead>
<tr>
<th>Criteria 2000 Outcome</th>
<th>Transcript Degree Progress Report (D)</th>
<th>Alumni Surveys (1)</th>
<th>Student Portfolios (D)</th>
<th>Senior Design Evaluation Team (D)</th>
<th>Employer Survey (1)</th>
<th>Placement Data (1)</th>
<th>Exit Survey (1)</th>
<th>Exit Interview (1)</th>
<th>FE Exam (D)</th>
<th>Student Projects/ Honors Theses/ Publications (D)</th>
<th>Advisory Board Review (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3-a) Ability to apply Math, Science and Engineering</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(3-b) Design and conduct Experiments and Data Analysis</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(3-c) Design system, Component, Process</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(3-d) Multidisciplinary Team work</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>(3-e) Identify, formulate and solve Problems</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>(3-f) Professionalism and Ethics</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>(3-g) Communication</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(3-h) Broad Education</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(3-i) Life-Long Learning</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(3-j) Knowledge of Contemporary Issues</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(3-k) Techniques and Tools</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
2. LICENSING AND ACCREDITATION AGENCIES
ACCREDITATION PROCESSES

1. Puerto Rico Education Council Licensing Process (PREC)
2. Middle States Commission on Higher Education Accreditation Process (MSCHE)
3. National Architectural Accrediting Board Accreditation Process (NAAB)
4. The Accreditation Board for Engineering and Technology Accreditation Process (ABET)
5. International Assembly for Collegiate Business Education Accreditation Process (IACBE)
6. Landscape Architectural Accreditation Board Accreditation Process
7. Florida Commission for Independent Education (CIE)
2.1 PUERTO RICO EDUCATION COUNCIL (PREC) LICENSING PROCESS

The Puerto Rico Education Council (PREC) is the agency of the Commonwealth of Puerto Rico responsible of licensing the public and private institutions of education from Pre K to Ph.D. interested in awarding academic degrees within its territory. The (PREC) came into existence through Puerto Rico the Reorganization Plan No. 1 of July 16, 2010.

The Article II, section 5 of the Constitution of Puerto Rico, clearly establishes that:

Every person has the right to an education prone or apt to full development of the personality and the strengthening of the respect to the fundamental civil rights of the human being. Will exist a public education system totally free from religious sectarianism. For the absolute protection of this right, the said public policy necessarily should have the following fundamental principles:

1. The protection of the free selection of the academic offering, for the student at post-secondary level and for the parents of the student in the primary and secondary levels;

2. the accessibility to study and training programs that comply with the standards of the academic and professional community, such that the courses offered in Puerto Rico be recognized by the accrediting and regulatory authorities beyond our local jurisdiction;

3. the respect or consideration to the free interchange of ideas within the academic and professional community and to the freedom of action of each institution;

4. the respect or consideration to the autonomy of the institutions to organize, administer and adopt by themselves the educational philosophy consonant with their institutional principles.
The Puerto Rico Council of Education (PREC) will issue two types of licenses: a) License of Authorization for the first five years and b) a License of Renewal every subsequent five year period. The procedure to apply for either license is described in chapter IV, Article 17 of *The Manual for Awarding of License to Institutions of Higher Education in Puerto Rico* in effect since October 19, 2011. (2) All the institutions that may have the need to amend the license as a consequence of a “substantial change”, as established in Chapter V, Article 31 of the manual must submit the corresponding application to the Council, including the fees and the supporting documents.

After meeting all requirements specified in the law and the manual, the Council will issue the corresponding license in accordance with article 37 of the manual, whenever it is for a License of Authorization or for a License Renewal, must contain information about how the institution satisfies the minimum requirements established in Chapter IV of the manual, covering the following topics.

a. Facilities

b. Experience and credentials of the administrators

c. Financial Capacity

d. Breadth and depth of the academic programs for the development of skills and knowledge intended to be acquired by the students.

e. Experience and academic credentials of the faculty members and the adequacy of the same relative to the institutional offerings.

f. Library resources

g. Laboratories and auxiliary equipment needed for effective teaching.

h. Students services

i. Policies of insurance covering students and the academic community.
However, a more detailed list of criteria, obtained from PREC visit reports is kept in file.

Application for amendments to the License responding to substantial changes and the supporting documents needed shall comply with the Chapter V of the manual. The notification of significant changes and the supporting documents do not require the amendment of the license and the same shall be in accordance with the article 63 of chapter VI of the manual.


The Office of Planning and Development normally leads the Institution in the drafting, editing and submittal of any application to the PREC for a License of authorization or for a License of Renewal, as well as amendments to the License, whenever it is deemed needed. Also it is responsible of handling all written communication from the PREC and of coordinating all its visits to the Institution.
The Institution decides to apply for a License of Authorization, as an Institution of Higher Education to offer higher education degrees.

The Institution drafts the application for a License of Authorization. The application should comply with the minimum required elements defined in Chapter IV of the Council of Education (PREC) Regulations.

The Institution should file the application with the PREC at least 6 months before the date when operations start.

The PREC analyses the application and confirms that the applicant has complied with all requirements specified in section 20.3 submitting all information needed. Issues a Certificate within 20 days after the date the application was complete.

The PREC appoints a visiting Team to conduct the evaluation of the application.

The Visiting team conducts the visit to the Institution.

The Visiting Team submits an evaluation report consisting of three parts:

a. Findings Report- 30 days after the visit.
b. Institutional reaction to the findings

c. Final Report section 24.3

The PREC issues the license of Authorization stating, in writing, the constraints, if any, and the date of next evaluation for renewal of License.

The PREC announces the decision within 120 working days from the date the PREC certified that the application was officially filed-Section 26.2.1
Whenever the institution recognizes the need to apply for an amendment of the license in response to a “Substantial” change under consideration, the procedure to follow shall be in accordance with law No. 17 and with Section 21.3 of the PREC manual for the awarding of a License to Institutions of Higher Education in Puerto Rico in effect since August 1997.

Whenever the institution approaches the time to apply for renewal of the license the procedure to follow shall be in accordance with Law No. 17 of June 16, 1993 and Section 20.3 of the PREC manual for the awarding of a License to Institutions of Higher Education in Puerto Rico in effect since August, 1997.

Notification of “Significant” changes shall be done in accordance with Sections 62 and 63, Chapter VI, of the Manual

File letter of intent, Licensing under section 59.2, 12 months prior to changes are substantial and require evaluation and authorization by the PREC prior to implement of the said program.

File letter of intent, Licensing under section 59.3, six (6) months prior to changes

File application at least three (3) months prior to changes enter into effect

File letter of intention to renew the license at prior least twelve (12) months to date of expiration of license in effect

File application at least six (6) months prior to date of expiration of license in effect

File application at least six (6) months prior to changes enter into effect

PREC appoints the “Visiting Team” to examine the application, conduct the VISIT and report the findings (Section 24.3.1,2,3)

File notification of significant changes with the PREC prior to making changes effective
PUERTO RICO EDUCATION COUNCIL (PREC) LICENSING PROCESS
Figure II-2.1-C

C → PUPR shall respond to the findings within 30 working days (Section 24.3.4)

The visiting team or Junta Consultiva prepares and submit the Final Report (Section 24.3.5)

Delivery of the Final Report and the meeting of the PREC and PUPR representatives to discuss the Final Report (Section 24.2)

PREC announce final decision within 120 working days from the date PREC certified the application was received (Section 26.2)

PREC issues the License, the amendment to the license or the renewal of the license as the case may be. B
2.2 MIDDLE STATES COMMISSION ON HIGHER EDUCATION ACCREDITATION PROCESS

Middle States Association of Colleges and Schools (MSACS) through its Commission on Higher Education (MSCHE) conducts regularly scheduled evaluations of Polytechnic University of Puerto Rico. Every one of these scheduled evaluations begins with the design of the self-study and a visit to the campus by the staff member assigned to the Institution. Unless a longer evaluation process is chosen, approximately 18 to 24 months prior to an evaluation team visit, the staff member contacts the Chief Executive Officer to arrange for an on-campus visit and discussion of the accrediting process. The primary purpose of the visit is to discuss preparation and procedures for self-study and evaluation.

The staff visit is designed to:

- **orient** as many people as necessary to the purposes and procedures of accreditation;
- **provide** opportunities on campus for first hand discussion with a Commission representative; and
- **establish** the basis for determining the nature and scope of the projected self-study (including the chosen approach); the timing of the evaluation visit; and the organizational structure for conducting the self-study.

The Commission Staff member meets with the chief executive, other administrative officers, trustees, the steering committee for the self-study, the entire faculty or a substantially representative faculty group, and student representatives. Throughout the remainder of the self-study process, the staff member is available by telephone for information and consultation.
Self-study is an analysis by its own members of an institution's educational capability and effectiveness. It is the most important part of the MSCHE evaluation procedure for the institution. Institutional improvement is the objective, and the accrediting process should facilitate the attainment of the goal rather than make accreditation an end in itself. This institutional self-study is written following the Characteristics of Excellence in Higher Education (3) and the Designs for Excellence Handbook (4) guidelines.

The period of self-study preparation usually lasts at least a year and often more, and is characterized by the involvement of as broad a cross section of an institution's constituencies as is feasible.

The focus of the team's attention, during the Evaluation Team visit, is primarily the educational effectiveness of an institution.

The Figure II-2.2-A and II-2.2-B describes the accreditation process while the evaluation criteria are presented in References # 3 & 4. The guidelines for developing outcomes assessment plans at colleges and universities are contained in the Outcomes Assessment Plan. (5)

The framework for Outcomes Assessment (9) was designed to assist the said institutions meet the outcomes assessment requirements.

The fourteen criteria are listed below.

**Standards at a Glance**

**Institutional Context**

**Standard 1: Mission, Goals, and Objectives**

The institution's mission clearly defines its purpose within the context of higher education and explains whom the institution serves and what it intends to accomplish. The institution's stated goals and objectives, consistent with the aspirations and expectations of higher education clearly specify how the institution will fulfill its mission. The mission, goals, and objectives are developed and recognize by the institution with its members and its governing
body and are utilized to develop and shape its programs and practices and to evaluate its effectiveness.

**Standard 2: Planning, Resource Allocation, and Institutional Renewal**

An institution conducts ongoing planning and resource allocation based on its mission and uses the results of its assessment activities for institutional renewal. Implementation and subsequent evaluation of the success of the strategic plan and resource allocation support the development and change necessary to improved and to maintain institutional quality.

**Standard 3: Institutional Resources**

The human, financial, technical, physical facilities and other resources necessary to achieve an institution’s mission and goals are available and accessible. In the context of the institution’s mission, the effective and efficient uses of the institution’s resources are analyzed as part of ongoing outcomes assessment.

**Standard 4: Leadership and Governance**

The institution’s system of governance clearly defines the roles of institutional constituencies in policy development and decision-making. The governance structure includes an active governing body with sufficient autonomy to assure institutional integrity and to fulfill its responsibilities of policy and resource development, consistent with the mission of the institution.

**Standard 5: Administration**

The institution’s administrative structure and services facilitate learning and research/scholarship, foster quality improvement, and support the institution’s organization and governance.

**Standard 6: Integrity**

In the conduct of its programs and activities involving the public and the constituencies it serves, the institution demonstrates adherence to ethical
standards and its own stated policies, providing support to academic and intellectual freedom.

**Standard 7: Institutional Assessment**

The institution has developed and implemented as assessment plan and process that evaluates its overall effectiveness in: achieving its mission and goals; implementing planning, resource allocation, and institutional renewal processes; using institutional resources efficiently; providing leadership and governance; providing administrative structures and services; demonstrating institutional integrity; and assuring that institutional processes and resources support appropriate learning and other outcomes for its students and graduates.

**Educational Effectiveness**

**Standard 8: Student Admissions**

The institution seeks to admit students whose interests, goals, and abilities are congruent with its mission.

**Standard 9: Student Support Services**

The institution provides student support services reasonably necessary to enable each student to achieve the institution’s goals for students.

**Standard 10: Faculty**

The institution’s instructional; research and service programs are devised, developed, monitored, and supported by qualified professionals.

**Standard 11: Educational Offerings**

The institution’s educational offerings display academic content, rigor, and coherence that are appropriate to its higher education mission. The institution identifies student learning goals and objectives, including knowledge and skills, for its educational offerings.
**Standard 12: General Education**

The institution’s curricula are designed so that students acquire and demonstrate college-level proficiency in general education and essential skills, including oral and written communication, scientific and quantitative reasoning, critical analysis and reasoning, technological competency, and information literacy.

**Standard 13: Related Educational Activities**

Institutional programs or activities that are characterized by particular content, focus, location, mode of delivery, or sponsorship meet appropriate standards.

**Standard 14: Assessment of Student Learning**

Assessment of student learning demonstrates that the institution’s students have knowledge, skills, and competencies consistent with institutional goals and that students at graduation have achieved appropriate higher education goals.

The Office of Planning and Development (OPD) normally leads the Institution in the drafting, editing and submittal of the Design of the Self Study and of the Self Study itself, for a ten year accreditation. Also this office is responsible of handling all communications between the Agency and PUPR and of coordinating any visit by their officials or evaluating teams. Additionally, this office leads the institution in the preparation and submittal of a Periodic Review Report due five years from the date of reaccreditation.

Furthermore OPD will coordinate with each one of the Program Heads and Office Directors in conducting the institution-wide assessment required. The assessment instruments to be used are identified in the Appendices A to M.
**Starting time corresponds to the date of the President’s letter, To Middle States Commission of Higher Education Accreditation Process Figure II-2.2-A**
**Denotes scheduled meetings of Steering Committee, Additional meeting to be determined.**
2.3 NATIONAL ARCHITECTURAL ACCREDITING BOARD (NAAB) ACCREDITATION PROCESS

The National Architectural Accrediting Board is the sole agency authorized to accredit US professional degree programs in architecture. Since most state registration boards in the United States require any applicant for licensure to have graduated from a NAAB-accredited program, obtaining such a degree is an essential aspect of preparing for the professional practice of architecture. While graduation from a NAAB-accredited program does not assure registration, the accrediting process is intended to verify that each accredited program substantially meets those standards that, as a whole, comprise an appropriate education for an architect.

The curriculum of a NAAB-accredited program includes general studies, professional studies, and electives, which together comprise a liberal education in architecture. The curriculum ensures that graduates will be technically competent, critical thinkers who are capable of defining multiple career paths within a changing societal context.

More specifically, the NAAB requires an accredited program to produce graduates who: are competent in a range of intellectual, spatial, technical, and interpersonal skills; understand the historical, sociocultural, and environmental context of architecture; are able to solve architectural design problems, including the integration of technical systems and health and safety requirements; and comprehend architects’ roles and responsibilities in society.

Professional degree programs seeking initial, continuing, or reinstated accreditation undertake a sequence of events consisting of visit preparation, the site visit, and visit follow-up in accordance to the 1998 Conditions and Procedures for Professional Degree Programs in Architecture published by the NAAB. (6) (See Figure II-2-3-A, II-2.3-B and II-2.3-C)
Visit Preparation

- The Program Director writes the Architecture Program Report (APR)
- A visiting team is selected based on the subsequent acceptance of the APR
- Team members are invited and informed of their responsibilities
- The NAAB reviews and accepts the APR

The APR must include the following information:

- An overview of the program’s curricular goals and content
- A graphic matrix that cross-references each required course with the performance criterion (a) it fulfills.

The Site Visit

- A team room and other exhibits are organized
- The visit is scheduled and an agenda is established
- Travel and hotel accommodations are arranged
- The visit takes place, encompassing prescribed activities
- The program evaluates the accreditation sequence

Visit Follow-up

- The team writes the Visiting Team Report (VTR)
- The VTR is reviewed by the program and any necessary revisions are made
- The program evaluates the accreditation sequence
- The NAAB makes an accreditation decision
- The program maintains its accreditation through Annual Reports (ARs)
- In cases of non-compliance, the NAAB revokes accreditation

This sequence is governed throughout by rules of communication that prescribe correspondence from programs and teams to the NAAB office; responsibility for reporting a conflict of interest; standards of confidentiality; and public disclosure of accreditation outcomes. From time to time, a complaint or an appeal may ensue, the procedures for which are also prescribed.
Although the NAAB recognizes that the areas and levels of excellence will vary among different programs, all accredited professional degree programs must demonstrate compliance with each of the following twelve NAAB Conditions:

**Condition 1 - Response to the NAAB Perspectives**

1.1 Architecture Education and the Academic Context  
1.2 Architecture Education and the Students  
1.3 Architecture Education and Registration  
1.4 Architecture Education and the Profession  
1.5 Architecture Education and Society

**Condition 2 - Program Self-assessment**

**Condition 3 - Public Information**

**Condition 4 - Social Equality**

**Condition 5 - Human Resources**

**Condition 6 - Human Resources Development**

**Condition 7 - Physical Resources**

**Condition 8 - Information Resources**

**Condition 9 - Financial Resources**

**Condition 10 - Administrative Structure**

**Condition 11 - Professional Degrees and Curriculum**

**Condition 12 - Student Performance Criteria**

The last **Condition - Student Performance Criteria**, is present here with exactly as it appears in the 1998 *Conditions and Procedures*, which specifies in detail the requirements of accreditation.

**Student Performance Criteria (Appendix K-D)**

For the purposes of accreditation, graduating students must demonstrate awareness, understanding, or ability in the following areas:

1. **Verbal and Writing Skills** - *Ability to* speak and write effectively on subject matter contained in the professional curriculum.
2. **Graphic Skills** - *Ability to* employ appropriate representational media, including computer technology, to convey essential formal elements at each stage of the programming and design process.

3. **Research Skills** - *Ability to* employ basic methods of data collection and analysis to inform all aspects of the programming and design process.

4. **Critical Thinking Skills** - *Ability to* make a comprehensive analysis and evaluation of a building, building complex, or urban space.

5. **Fundamental Design Skills** - *Ability to* apply basic organizational, spatial, structural, and constructional principles to the conception and development of interior and exterior spaces, building elements, and components.

6. **Collaborative Skills** - *Ability to* identify and assume divergent roles that maximize individual talents, and to cooperate with other students when working as members of a design team and in other settings.

7. **Human Behavior** - *Awareness of* the theories and methods of inquiry that seek to clarify the relationships between human behavior and the physical environment.

8. **Human Diversity** - Awareness of the *diversity of needs, values, behavioral norms, and social and spatial patterns that characterize different cultures, and the implications of this diversity for the societal roles and responsibilities of architects.*

9. **Use of Precedents** - *Ability to* provide a coherent rationale for the programmatic and formal precedents employed in the conceptualization and development of architecture and urban design projects.

10. **Western Traditions** - *Understanding of* the Western architectural canons and tradition in architecture, landscape, and urban design, as well as the climatic, technological, socioeconomic, and other cultural factors that have shaped and sustained them.
11. **Non-Western Traditions** - *Awareness of* the parallel and divergent canons and traditions of architecture and urban design in the non-Western World.

12. **National and Regional Traditions** - *Understanding of* the national traditions and the local regional heritage in architecture, landscape, and urban design, including vernacular traditions.

13. **Environmental Conservation** - *Understanding of* the basic principles of ecology and the architect’s responsibilities with respect to environmental and resource conservation in architecture and urban design.

14. **Accessibility** - *Ability to* design both site and building to accommodate individuals with varying physical abilities.

15. **Site Conditions** - *Ability to* respond to natural and built site characteristics in the development of a program and design of a project.

16. **Formal Ordering Systems** - *Understanding of* the fundamentals of visual perception and the principles and systems of order that inform two-and three-dimensional design, architectural composition, and urban design.

17. **Structural Systems** - *Understanding of* the principles of structural behavior in withstanding gravity and lateral forces, and the evolution, range, and appropriate applications of contemporary structural systems.

18. **Environmental Systems** - *Understanding of* the basic principles that inform the design of environmental systems, including acoustics, lighting and climate modification systems, and energy use.

19. **Life-Safety Systems** - *Understanding of* the basic principles that inform the design and selection of life-safety systems in buildings and their subsystems.

20. **Building Envelope Systems** - *Understanding of* the basic principles that inform the design of building envelope systems.

21. **Building Service Systems** - *Understanding of* the basic principles that inform the design of building service systems, including plumbing,
22. Building Systems Integration - Ability to assess, select, and integrate structural systems, environmental systems, life-safety systems, building envelope systems, and building service systems into building design.

23. Legal Responsibilities - Understanding of architects’ legal responsibilities with respect to public health, safety, and welfare; property rights; zoning and subdivision ordinances; building codes; accessibility and other factors affecting building design, construction, and architecture practice.

24. Building Code Compliance - Understanding of the codes, regulations, and standards applicable to a given site and building design, including occupancy classifications, allowable building heights and areas, allowable construction types, separation requirements, occupancy requirements, means of egress, fire protection, and structure.

25. Building Materials and Assemblies - Understanding of the principles, conventions, standards, applications, and restrictions pertaining to the manufacture and use of construction materials, components, and assemblies.

26. Building Economics and Cost Control - Awareness of the fundamentals of development financing, building economics and construction cost control within the framework of a design project.

27. Detailed Design Development - Ability to assess, select, configure, and detail as an integral part of the design appropriate combinations of building materials, components, and assemblies to satisfy the requirements of building programs.

28. Technical Documentation - Ability to make technically precise descriptions and documentation of a proposed design for purposes of review and construction.

29. Comprehensive Design - Ability to produce an architecture project informed by a comprehensive program, from schematic design through the
detailed development of programmatic spaces, structural and environmental systems, life-safety provisions, wall section, and building assemblies, as may be appropriate; and to assess the completed project with respect to the program’s design criteria.

30. **Program Preparation** - *Ability to assemble a comprehensive program for an architecture project, including an assessment of client and user needs, a critical review of appropriate precedents, an inventory of space and equipment requirements, an analysis of site conditions, a review of the relevant laws and standards and an assessment of their implications for the project, and a definition of site selection and design assessment criteria.*

31. **The Legal Context of Architecture Practice** - *Awareness of the evolving legal context within which architects practice, and of the laws pertaining to professional registration, professional service contracts, and the formation of design firms and related legal entities.*

32. **Practice Organization Management** - *Awareness of the basic principles of office organization, business planning, marketing, negotiation, financial management, and leadership, as they apply to the practice of architecture.*

33. **Contracts and Documentation** - *Awareness of the different methods of project delivery, the corresponding forms of service contracts, and the types of documentation required to render competent and responsible professional service.*

34. **Professional Internship** - *Understanding of the role of internship in professional development, and the reciprocal rights and responsibilities of interns and employers.*

35. **Architect’s Leadership Roles** - *Awareness of architect’s leadership roles from project inception, design, and design development to contract administration, including the selection and coordination of allied disciplines, post-occupancy evaluation, and facility management.*
36. The Context of Architecture - *Understanding of* the shifts which occur and have occurred in the social, political, technological, ecological, and economic factors that shape the practice of architecture.

37. Ethics and Professional Judgment - *Awareness of* the ethical issues involved in the formation of professional judgments in architecture design and practice.

The Dean of the School of Architecture leads the accreditation process before the National Architectural Accrediting Board on behalf of the PUPR. When deficiencies, if any, are minor and that the intent to correct them is assured, the program is accredited for a maximum of a five-year period. He is responsible, with the active participation of his faculty, to drafting, editing and submittal of the Self Study required. He is also responsible of handling all communications between the NAAB and Institution and of coordinating teams. Also he is responsible for the preparation of any special report requested additionally about the progress status of the program. Furthermore, the Dean in close coordination with the Faculty conducts the assessment of the Program, as required and indicated by the Institution.

The assessment instruments are provided in Appendices.
The Program maintains candidacy status through biennial site visits that are initiated by submitting an APR. The initial accreditation should be achieved within a maximum period of six years. Otherwise, should submit a new candidacy application.

**Initial Site Visit Requirements**
1. Completion of a two year minimum with continuous candidacy status
2. One graduating class completed entire professional degree program
3. Evidence that the plan for complying with NAAB conditions will be achieved by the initial site visit

The NAAB grants candidacy status when the application is complete NAAB authorizes a site visit by a three person visiting team, who submits a Visiting Team Report (VTR). The NAAB reviews for completeness and clarity and accepts the APR when the application is complete.

When the application is complete NAAB authorizes a site visit by a three person visiting team, who submits a Visiting Team Report (VTR). The NAAB reviews the Architecture Program Report (APR), written as an integral part of the application, the VTR and any additional relevant information.

Program writes the APR and submits it to NAAB no later than September 7 of the academic year in which the initial accreditation action is needed. Pending acceptance of the APR, visiting team is selected and approved by NAAB at its meeting in the year preceding the site visit.

NAAB reviews for completeness and clarity and accepts the APR.

Are these conditions met?

Less than 6 years?

**NAAB ACCREDITATION PROCESS**
Figure II-2.3-A
**Note:**

ACSA - Association of Collegiate Schools of Architecture
AIA - American Institute of Architects
AIAS - The American Institute of Architecture Students
NCARB - National Council of Architectural Registration Boards

**NAAB ACCREDITATION PROCESS**

*Figure II-2.3-B*
Architecture program is seeking continuing accreditation after a five year initial. NAAB notifies in October of the academic year preceding the visit that the APR is due on September 7 of the next academic year.

School of Architecture writes the Architecture Program Report (ARP) and file it with NAAB not later than August of the academic year when the visit takes place.

A visiting team is selected based on the acceptance of the APR by NAAB in June of academic year prior to visit.

NAAB reviews and accepts the APR and team members are invited no later than November 15 of the academic year when the visit takes place.

Visit takes place encompassing prescribed activities in the agenda in February.

Team writes the Visiting Team Report (VTR) in March.

Program evaluates the accreditation sequence and accepts VTR in May.

NAAB reviews VTR and makes a decision in June.

What's the accreditation decision?

Five year term

Two year term probation must show cause for continuance of accreditation. May lead to two options:

Three year term

In case of noncompliance, the NAAB revokes accreditation.

Three options

Two options

B

C
Architecture program is seeking continuing accreditation after a five year initial accreditation. NAAB notifies in October of the year preceding academic the visit that the APR is due on September 7 of the next academic year.

**YES**

The program maintains its accreditation through annual reports (ARN)

Three year term. The lead to three options:
- five year term
- three year term
- two year term

Five year term

NAAB reviews VTR and makes accreditation decision in June. Is the program accredited?

Program evaluates the accreditation sequence and accepts VTR in May

In case of non-compliance, the NAAB revokes accreditation

In case of non-

Two year term probation must show cause for continuance of accreditation. May lead to two options:
- three year term at least
- revoke

Two year term

NAAB ACCREDITATION PROCESS
Figure II-2.3-D
2.4 THE ACCREDITATION BOARD FOR ENGINEERING AND TECHNOLOGY ACCREDITATION PROCESS (ABET)

The ABET Engineering Criteria 2000, which is in effect for all general reviews since the accreditation cycle 2001-2002, are characterized by their brevity, encouragement in innovation and emphasis in Outcomes Assessment. These new criteria are extraordinarily brief compared to the old criteria, requiring little more than two pages to publish the general criteria. Program criteria are also very brief, with two, or at most three, paragraphs for each participating discipline.

As an example of encouragement in innovation, program faculty is required to develop educational objectives and subsequently to design curricula which are consistent with their institutional mission and with the needs of their constituencies.

Regarding the emphasis in outcomes assessment, program faculty must demonstrate that outcomes that are important to the mission of their institutions and the educational objectives of their programs are being measured and that ongoing assessment efforts are being used to further develop and improve programs.

The previous accreditation Criteria evolved to such a complex nature that made the self-study process extremely cumbersome for the academic institutions to comply with them. The “bean counting” inputs lost the focus. There was no emphasis placed in the system processing the inputs much less in the Outcomes of the system process.

Criteria for Accrediting Engineering programs as well as criteria for Accrediting, Applied Science, Computing and Technology Programs are focused in the assessment of the outcomes.
As the several programs are prepared for accreditation review, several types of linkages must be carefully documented. The figure shown here gives a view of these relationships. It is important to keep in mind the following points regarding the figure.


- Develop Shared Vision, Mission, and Objectives
- Assure Institutional Support and Financial Resources for the Program (Criterion 7)
- Develop Program Educational Objectives (Criterion 2)
- Assure Faculty Competence (Criterion 5)
- Develop Program Curriculum for Students (Criterion 4)
- Provide Adequate Facilities (Criterion 6)
- Evaluate, Advise and Monitor Students (Criterion 1)
- Assess and Document Results Concerning Program Outcomes (Criterion 3)
- Satisfy Program Criteria (Criterion 8)
The Dean of Engineering and Geomatic Science is responsible, with the active participation of each of the Program Heads and the respective Program Faculty of drafting, editing and submittal of the Program Self Study required by each program submitted. Since ABET accredits programs, each program is treated as a unit and is assigned one evaluator. The Dean is also responsible of handling all communication between ABET and PUPR, and of coordinating all visits of their officials or evaluating teams. He is also responsible for the submittal of any special report requested additionally about the progress status of the program.

Furthermore, the Dean in close coordination with the Program Heads and Faculty, conducts the outcomes assessment of every program and helps in conducting the institution-wide assessment required.

The assessment instruments to be used are identified in the Appendixes A to M. Since the focus of Criteria for Accrediting Programs is the assessment of the outcomes, that is, what are the results obtained from the resources employed as inputs to the academic system and have these results compare to the mission defined by the institution, to documentation of every step is required. The cornerstone of the preparation process is a concise statement of program educational objectives.

1. In order to build on these objectives, we must first document that program objectives are consistent with our institution mission and that institution support and financial resources are present.
2. We must document that faculty competencies and campus facilities match selected program objectives.
3. We must show evidence that the structure of the curriculum follows from our institution mission and faculty, that financial resources are available; and that the curriculum meets ABET general applicable program criteria.
With curriculum, faculty, and facility linkages confirmed, evidence must be provided to demonstrate that processes are in place to assess the progress of our students through the curriculum, to assess program outcomes, and to conduct any special assessments required by applicable program criteria.

The Dean of the School of Engineering leads the accreditation process before the corresponding Commission of Accreditation Board for Engineering and Technology on behalf of the PUPR. When the evaluation of a program indicates that the program satisfies the published criteria of the corresponding Commission granting accreditation may be accredited for a full term of six years. Otherwise, if the evaluation indicates that the future of a program appears precarious or that definite weaknesses or deficiencies exist, accreditation may be granted for a shorter period of time, usually two years.
2.4.1 THE PROCESS FOR DETERMINING PROGRAM EDUCATIONAL OBJECTIVES AND ITS ASSESSMENT PROCESS

The Program educational objectives, specifically required by ABET Criterion 2, are equally relevant and applicable to all other accreditation agencies participating. It is required that a systematic and documented procedure is in place to insure that our Institution mission, the needs of our program constituents and findings from our ongoing program assessments are periodically reviewed, and that information from these sources is used from time to time to refine our educational objectives. It is intended that this procedure be followed by all PUPR concerned programs.

**A Process for Determining Program Educational Objectives**

Each program must have a process based on needs of the program’s constituencies by which educational objectives, consistent with the mission of the institution, are determined and periodically evaluated.

*Needs of Program Constituents*

- Mission of Institution
- Determine Program Objectives
- Periodically Review Objectives
- Findings from Program Assessment
- Program Objectives
While we must choose educational objectives that are consistent with our Institution’s mission and the needs of our constituents, the ABET accrediting Commissions require two common structural components for every set of program educational objectives.

We must have program specific objectives for which we can document relationships to our Institution mission and to any special needs of our program constituents.

Secondly, we must also have objectives consistent with ABET Criteria relating to general Criteria 1-7 and to the discipline-specific program criteria in Criterion 8. Of course, in our definition of educational objectives, we may have one objective that fits into two or more of the required objective areas.

For example, our institutional mission as a teaching university could fit into a program objective to prepare graduates for successful graduate study and also fit into ABET Criteria 3 (i) “recognition of the need for and an ability to engage in life-long learning.”

The Program Head leads the Program Faculty in defining the program educational objectives based on needs of the program’s constituencies. This process composed of a short term (1-2 years) and a long term (5-6 years) is activated every year. The short term cycle has the purpose of evaluating the level of achievement of the stated objectives. The long-term cycle has the purpose of determining what the new program objectives should be.

Furthermore, the Program Head leads the Program Faculty in developing the instruments needed to determine the program educational objectives and the assessment of them. See Appendices A to M.
2.4.2 THE PROCESS FOR DETERMINING PROGRAM OUTCOMES
AND CONDUCTING ASSESSMENT

The second assessment process comes from Criterion 3 and Criterion 9 of ABET Criteria but similarly, because of its relevance may be applicable to all other accreditation agencies invited to visit the respective programs. Criterion 3 requires documentation that a systematic procedure is in place to measure program outcomes that reflect our program educational objectives. Criterion 3 also requires that we show evidence that finding from outcomes assessments have been successfully used to improve our program. Finally, Criterion 3 requires that we provide documentation that the results of our curriculum refinement efforts are considered in making modifications to the set of outcomes that we monitor. PUPR intends to apply criterion 3, A to K, to every academic program, to the extent that it is feasible, practical or may be adopted.

Following the same philosophy used in the *program educational objectives assessment process*, the *program outcomes assessment process* is composed of two cycles. One long-term cycle (every 5 to 6 years is conducted after the program academic objectives are established.) The short-term cycle (every 1 to 2 years) has the purpose to evaluate how successfully the new stated outcomes are accomplished by program student.

The Program Head leads the faculty in performing the outcomes assessment some of the instruments that may be used are presented in the corresponding Appendix from A to M.

Each program must have an assessment process with documented results. The assessment process must demonstrate that outcomes important to the mission of the institution and the objectives of program, including those specified in ABET Criterion 3, are being measured.
This outcomes assessment requires:

a. documentation that a systematic procedure is in place to measure program outcomes that reflect our program educational objectives

b. that we show evidence that findings from outcomes assessment have been successfully used to improve our program

c. that we provide documentation that the results of our curriculum refinement efforts are considered in making modifications to the set of outcomes that we monitor.

Following the same philosophy used in the program objectives assessment process described earlier, the program outcomes assessment process is composed of two cycles (See figure below).

One long-term-cycle (every 5 to 6 years) conducted after objectives reevaluation based on the needs and input from Constituencies. Changes in objectives may imply a reevaluation of all information that relates objectives and outcomes.
It also implies a review of the areas of the programs where outcomes are measured. Any change to the program outcomes could be made at that time. In addition, the matrix that relates outcomes with objectives need to be updated. Also, the matrix that relates the courses with the outcomes receives a major review in this cycle. This process is considered to be completely linked to Objectives Evaluation Process.

**Program Educational Objectives and Program Outcomes**

**Two Cycle Assessment Process**

1. Evaluate/Change Educational Objectives
2. Input from Constituencies
3. Propose Program Curricular Changes to Support New Objectives
4. Re-evaluation of Information relating objectives and Outcomes. Review
5. Apply Outcomes Assessment Tools
6. Implement Improvements
7. Process Results
8. Analysis & Findings
9. Propose Improvements

**5 – 6 year cycle**

**1 – 2 year / term cycle**
From ABET Criterion 8, by explicit requirement, we must measure and monitor the outcomes which are defined by the Program Criteria for each discipline.

From ABET Criterion 3, by implication, we must also measure and monitor other outcomes important to our Institution mission and program objectives.

In our measurement processes we may choose one measurement indicator to document the attainment of more than one outcome. For example, performance in a capstone design course may be used to document students’ “ability to design a system component, or process to meet desired needs” as well as to show “ability to communicate effectively.”
The IACBE accredits degree programs in business and business-related fields at institutions with baccalaureate and/or graduate degree programs. This includes institutions with U.S. – based regional accreditation. All degree programs offered by the business unit (which may be a department, division, school, or college) are normally included in the IACBE accreditation process. The IACBE expects the traditional areas of business specialization such as business administration, accounting, economics, finance, human resources, information management, international business, leadership, management, marketing, and other business-related fields to be offered through the business unit.

The IACBE utilizes a distinctly different approach to accreditation, where excellence in business education is based on the results of the assessment of educational outcomes, rather than on prescriptive input standards. Inputs do not necessarily correlate with quality outcomes, since the quality of outcomes is dependent not only on inputs, but also on the processes used by the institution to covert inputs to outcomes. The accrediting process is based on expectations rather than standards.
2.5.1 PROGRAM EXPECTATIONS

Curriculum (A):

*Expectation A-1: Common Professional Component*

The Common Professional Component (CPC) topical areas, as outlined below, should be adequately covered within the content of business degree programs.

A) Accounting
B) Marketing
C) Finance
D) Management
   a. Management Principles
   b. Organizational Behavior
   c. Human Resource Management
   d. Operations Management
E) Economic / Social / Legal Environment
   a. Legal Environment of Business
   b. Economics
   c. Business Ethics
F) Business Tools
   a. Information Systems
   b. Quantitative Methods/Statistics
G) International / Global Dimensions of Business
H) Integrative Experience, such as:
   a. Business Policy / Strategy
   b. Required Internship
   c. Capstone experience (an experience that enables a student to demonstrate the capacity to synthesize and apply knowledge from an organizational perspective, such as a thesis, project, comprehensive examination or course, etc.)
Expectation A-2: General Education

General education should comprise a significant portion (usually at least 40 percent) of the total credit-hours required for an undergraduate degree.

Expectation A-3: Breadth of Curriculum

Business degree programs should include sufficient advanced courses to prepare students for careers and/or further study. In areas of business specialization, breadth and depth beyond the common professional component should be demonstrated. (Normally, a minimum of 40 percent of the total credit-hours for an undergraduate degree should be dedicated to business or business related courses.)

Expectation A-4: Curriculum Review and Improvement

Curriculum review and improvement should be an on-going process that is supported by outcomes assessment, the results of which are used to ensure excellence in the academic programs.

Expectation A-5: Interdisciplinary Programs

An undergraduate academic program with business content may be accredited, provided there is adequate coverage of business courses in the interdisciplinary program (usually at least 25 percent).

Expectation A-6: Master’s Degree Programs

Master’s degree programs in business should require minimum of thirty semester credit-hours (forty-five quarter hours) of graduate-level course work. These courses should be beyond the level of the undergraduate CPC courses. The thirty semester hours of graduate-level course work should be in courses normally reserved for graduate students.
**Expectation A-7: Doctoral Programs**

All doctoral programs in business and business-related fields must meet the requirements of the appropriate Regional Body, as well as requirements of IACBE.

**Expectation A-8: Admission to Graduate Programs**

A graduate business or business-related program should have an articulated admissions policy whereby students who are accepted into the program have a reasonable expectation to succeed.

**Faculty Characteristics: (B)**

**Expectation B-1: Faculty Qualifications**

To ensure that academic programs are properly supported, a high percentage of the undergraduate and graduate student credit-hours sponsored by the academic business unit will be taught by doctorally-qualified and professionally-qualify faculty members.

The Dean of the School of Management leads the accreditation process before the International Assembly for Collegiate Business Education (IACBE) on behalf of the PUPR (see Figures II-2.5-A and II-2.5-B). When deficiencies, if any, are minor and that the intent to correct them is assured, the program is accredited for a maximum of a ten year period. He is responsible, with the active participation of his faculty to drafting, editing and submittal of the Self Study required. He is also responsible of handling all communications between IACBE and PUPR and of coordinating teams. Also he is responsible for the preparation of any special report request additionally about the progress status of the program. Furthermore, the Dean in close coordination with the faculty conducts the assessment of the Program, as required and indicated by the PUPR. The assessment instruments are provided in Appendix I.
2.6 LANDSCAPE ARCHITECTURAL ACCREDITATION BOARD (LAAB) ACCREDITATION PROCESS

The LAAB is the accrediting organization for landscape architectural programs. As such, LAAB develops standards to objectively evaluate landscape architectural programs and judges whether a school's landscape architectural program is in compliance with the accreditation standards.

The LAAB is comprised of landscape architecture practitioners and academicians, representatives from landscape architecture collateral organizations, and public representatives. The collateral organizations are the following:

- American Society of Landscape Architects (ASLA)
- Council of Landscape Architectural Registration Boards (CLARB)
- Council of Educators in Landscape Architecture (CELA)

Accreditation by LAAB is a non-governmental, voluntary system of self-regulation and self-evaluation. LAAB is a specialized accrediting agency that accredits educational programs leading to first professional degrees at the bachelor’s or master’s level. For this purpose has developed standards that ensure the essential educational components leading to an entry level professional competence. These standards have three basic purposes:

- To advance academic quality in higher education
- To demonstrate accountability
- To encourage purposeful change and needed improvement

LAAB has received Council for Higher Education Accreditation (CHEA) recognition and must conform to CHEA standards.

The accreditation procedure is depicted in Figure II-2.6-A.
STANDARD 1: PROGRAM MISSION AND OBJECTIVES

The program shall have a clearly defined mission supported by goals and objectives appropriate to the profession of landscape architecture and shall demonstrate progress towards their attainment.

INTENT: Using a clear concise mission statement, each landscape architecture program should define its core values and fundamental purpose for faculty, students, prospective students, and the institution. The mission statement summarizes why the program exists and the needs that it seeks to fulfill. It also provides a benchmark for assessing how well the program is meeting the stated objectives.

A. PROGRAM MISSION. The mission statement expresses the underlying purposes and values of the program.

Assessment: Does the program have a clearly stated mission reflecting the purpose and values of the program and does it relate to the institution’s mission statement?

B. EDUCATIONAL GOALS. Clearly defined and formally stated academic goals reflect the mission and demonstrate that attainment of the goals will fulfill the program mission.

Assessment: Does the program have an effective procedure to determine progress in meeting its goals and is it used regularly?

C. EDUCATIONAL OBJECTIVES. The educational objectives specifically describe how each of the academic goals will be achieved.

Assessment: Does the program have clearly defined and achievable educational objectives that describe how the goals will be met?

D. LONG-RANGE PLANNING PROCESS. The program is engaged in a long-range planning process.
Assessment 1: Does the long-range plan describe how the program mission and objectives will be met and document the review and evaluation process?
Assessment 2: Is the long-range plan reviewed and revised periodically and does it present realistic and attainable methods for advancing the academic mission?
Assessment 3: Does the self-evaluation report (SER) respond to recommendations and suggestions from the previous accreditation review and does it report on efforts to rectify identified weaknesses?

E. PROGRAM DISCLOSURE. Program literature and promotional media accurately describe the program’s mission, objectives, educational experiences and accreditation status.

Assessment: Is the program information accurate?

STANDARD 2: PROGRAM AUTONOMY, GOVERNANCE & ADMINISTRATION

The program shall have the authority and resources to achieve its mission, goals and objectives.

INTENT: Landscape architecture should be recognized as a discrete professional program with sufficient financial and institutional support and authority to enable achievement of the stated program mission, goals and objectives.

A. Program Administration. Landscape architecture is administered as an identifiable/discrete program.

Assessment 1: Is the program seen as a discrete and identifiable program within the institution?
Assessment 2: Does the program administrator hold a faculty appointment in landscape architecture?
Assessment 3: Does the program administrator exercise the leadership and management functions of the program?
**B. Institutional Support.** The institution provides sufficient resources to enable the program to achieve its mission and goals and support individual faculty development and advancement.

*Assessment 1: Are student/faculty ratios in studios typically not greater than 15:1?*

*Assessment 2: Is funding available to assist faculty and other instructional personnel with continued professional development including support in developing funded grants, attendance at conferences, computers and appropriate software, other types of equipment, and technical support?*

*Assessment 3: Is funding adequate for student support, i.e., scholarships, work-study, etc?*

*Assessment 4: Are adequate support personnel available to accomplish program mission and goals?*

**C. Commitment to Diversity.** The program demonstrates commitment to diversity through its recruitment and retention of faculty, staff, and students.

*Assessment: How does the program demonstrate its commitment to diversity in the recruitment and retention of students, faculty and staff?*

**D. Faculty Participation.** The faculty participates in program governance and administration.

*Assessment 1: Does the faculty make recommendations on the allocation of resources and do they have the responsibility to develop, implement, evaluate, and modify the program’s curriculum and operating practices?*

*Assessment 2: Does the faculty participate, in accordance with institutional guidelines, in developing criteria and procedures for annual evaluation, promotion and tenure of faculty?*

*Assessment 3: Does the program or institution adequately communicate and mentor faculty regarding policies, expectations and procedures for annual evaluations, and for tenure and promotion to all ranks?*
E. Faculty Number. The faculty shall be of a sufficient size to accomplish the program’s goals and objectives, to teach the curriculum, to support students through advising and other functions, to engage in research, creative activity and scholarship and to be actively involved in professional endeavors such as presenting at conferences. To address this criterion:

1. a unit that offers a first professional program should have a minimum of five fulltime faculty who hold professional degrees in landscape architecture; and

2. an academic unit that offers a first professional degree at both bachelor’s and master’s levels should have a minimum of seven fulltime faculty, at least five of whom hold professional degrees in landscape architecture.¹

Assessment 1: Does an academic unit that offers a first professional program have a minimum of five fulltime faculty who hold professional degrees in landscape architecture?

Assessment 2: Does an academic unit that offers first professional programs at both bachelor’s and master’s levels, have a minimum of seven fulltime faculty, at least five of whom hold professional degrees in landscape architecture?

Assessment 3: Does the strategic plan or long range plan include action item(s) for addressing the adequacy of the number of faculty?

Assessment 4: Are the number of faculty adequate to achieve the program’s mission and goals and individual faculty development?

<table>
<thead>
<tr>
<th>LAAB Recommendations for First Professional Degree Program</th>
<th>Full-Time Faculty</th>
<th>F/T Faculty with Professional Degree in Landscape Architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Program</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Bachelors &amp; Master Program</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>

¹This criterion does not conflict with the numbers listed in the Minimum Requirements for Achieving and Maintaining Accredited Status (p. 5). Those numbers are minimums and are expected for emerging programs and programs that are becoming established to enroll a small number of students.
STANDARD 3: PROFESSIONAL CURRICULUM

The first professional-degree curriculum shall include the core knowledge skills and applications of landscape architecture.

a. In addition to the professional curriculum, a first professional degree program at the bachelor’s level shall provide an educational context enriched by other disciplines, including but not limited to: liberal and fine arts, natural sciences, and social sciences, as well as opportunities for students to develop other areas of interest.

b. In addition to the professional curriculum, a first professional degree at the master’s level shall provide instruction in and application of research and or/scholarly methods.

c. A first professional degree at the master’s level that does not require all students to have an undergraduate degree before receiving the MLA shall meet the requirements for a and b.

INTENT: The purpose of the curriculum is to achieve the learning goals stated in the mission and objectives. Curriculum objectives should relate to the program’s mission and specific learning objectives. The program’s curriculum should encompass coursework and other opportunities intended to develop students’ knowledge, skills, and abilities in landscape architecture.

A. Mission and Objectives. The program’s curriculum addresses its mission, goals, and objectives.

Assessment: Does the program identify the knowledge, skills, abilities and values it expects students to possess at graduation?

B. Professional Curriculum. The program curriculum includes coverage of:

- History, theory and criticism.
- Natural and cultural systems including principles of sustainability.
- Public Policy and regulation.
• Design, planning and management at various scales and applications including but not limited to pedestrian and vehicular circulation, grading drainage and storm water management.
• Site design and Implementation: materials, methods, technologies, application.
• Construction documentation and administration.
• Written, verbal and visual communication.
• Professional practice.
• Professional values and ethics.
• Plants and ecosystems.
• Computer applications and other advanced technology.

Assessment 1: Does the curriculum address the designated subject matter in a sequence that supports its goals and objectives?
Assessment 2: Does student work and other accomplishments demonstrate that the curriculum is providing students with the appropriate content to enter the profession?
Assessment 3: Do curriculum and program opportunities enable students to pursue academic interests consistent with institutional requirements and entry into the profession?

C. Syllabi. Syllabi are maintained for courses.
Assessment 1: Do syllabi include educational objectives, course content, and the criteria and methods that will be used to evaluate student performance?
Assessment 2: Do syllabi identify the various levels of accomplishment students shall achieve to successfully complete the course and advance in the curriculum?

D. Curriculum Evaluation. At the course and curriculum levels, the program evaluates how effectively the curriculum is helping students achieve the program’s learning objectives in a timely way.
Assessment 1: Does the program demonstrate and document ways of:
d. Assessing students’ achievement of course and program objectives in the length of time to graduation stated by the program?

e. Reviewing and improving the effectiveness of instructional methods in curriculum delivery?

f. Maintaining currency with evolving technologies, methodologies, theories and values of the profession?

Assessment 2: Do students participate in evaluation of the program, courses and curriculum?

E. Augmentation of Formal Educational Experience. The program provides opportunities for students to participate in internships, off campus studies, research assistantships, or practicum experiences.

Assessment 1: Does the program provide any of these opportunities?

Assessment 2: How does the program identify the objectives and evaluate the effectiveness of these opportunities?

Assessment 3: Do students report on these experiences to their peers? If so, how?

F. Coursework (Bachelor’s Level). In addition to the professional curriculum, students also pursue coursework in other disciplines in accordance with institutional and program requirements.

Assessment: Do students take courses in the humanities, natural sciences, social sciences or other disciplines?

G. Areas of Interest (Bachelor’s Level). The program provides opportunities for students to pursue special interests.

Assessment 1: Does the program provide opportunities for students to pursue independent projects, focused electives, optional studios, certificates, minors, etc.

Assessment 2: Does student work incorporates academic experiences reflecting a variety of pursuits beyond the basic curriculum?
H. Research/Scholarly Methods (Master’s Level). The program provides an introduction to research and scholarly methods.

Assessment 1: Does the curriculum provide an introduction to research and scholarly methods and their relation to the profession of landscape architecture?

Assessment 2: Does the program demonstrate that theses or terminal projects exhibit creative and independent thinking and contain a significant research/scholarly component?

STANDARD 4: STUDENT AND PROGRAM OUTCOMES.
The program shall prepare students to pursue careers in landscape architecture.

INTENT: Students should be prepared – through educational programs, advising, and other academic and professional opportunities – to pursue a career in landscape architecture upon graduation. Students should have demonstrated knowledge and skills in creative problem solving, critical thinking, communications, design, and organization to allow them to enter the profession of landscape architecture.

A. Student Learning Outcomes. Upon completion of the program, students are qualified to pursue a career in landscape architecture.

Assessment 1: Does student work demonstrate the competency required for entry level positions in the profession of landscape architecture?

Assessment 2: Do students demonstrate their achievement of the program’s learning objectives, including critical and creative thinking and their ability to understand, apply and communicate the subject matter of the professional curriculum as evidenced through project definition, problem identification, information collection, analysis, synthesis, conceptualization and implementation?
B. Student Advising. The program provides students with effective advising and mentoring throughout their educational careers.

Assessment 1: Are students effectively advised and mentored regarding academic development?

Assessment 2: Are students effectively advised and mentored regarding career development?

Assessment 3: Are students aware of professional opportunities, licensure, professional development, advanced educational opportunities and continuing education requirements associated with professional practice?

Assessment 4: How satisfied are students with academic experiences and their preparation for the landscape architecture profession?

C. Participation in Extra Curricular Activities. Students are encouraged and have the opportunity to participate in professional activities and institutional and community service.

Assessment 1: Do students participate in institutional/college organizations, community initiatives, or other activities?

Assessment 2: Do students participate in events such as LaBash, ASLA Annual Meetings, local ASLA chapter events and the activities of other professional societies or special interest groups?

STANDARD 5: FACULTY

The qualifications, academic position, and professional activities of faculty and instructional personnel shall promote and enhance the academic mission and objectives of the program.

INTENT: The program should have qualified experienced faculty and other instructional personnel to instill the knowledge, skills, and abilities that students will need to pursue a career in landscape architecture. Faculty workloads, compensation, and overall support received for career development contribute to the success of the program.
A. Credentials. The qualifications of the faculty, instructional personnel, and teaching assistants are appropriate to their roles.

Assessment 1: Does the faculty have a balance of professional practice and academic experience appropriate to the program mission?

Assessment 2: Are faculty assignments appropriate to the course content and program mission?

Assessment 3: Are adjunct and/or part-time faculty integrated into the program’s administration and curriculum evaluation/development in a coordinated and organized manner?

Assessment 4: Are qualifications appropriate to responsibilities of the program as defined by the institution?

B. Faculty Development. The faculty is continuously engaged in activities leading to their professional growth and advancement, the advancement of the profession, and the effectiveness of the program.

Assessment 1: Are faculty activities such as scholarly inquiry, research, professional practice and service to the profession, university and community documented and disseminated through appropriate media such as journals, professional magazines, community, college and university media?

Assessment 2: Do faculty teaching and administrative assignments allow sufficient opportunity to pursue advancement and professional development?

Assessment 3: Are the development and teaching effectiveness of faculty and instructional personnel systematically evaluated, and are the results used for individual and program improvement?

Assessment 4: Do faculty seek and make effective use of available funding for conference attendance, equipment and technical support, etc.?

Assessment 5: Are the activities of faculty reviewed and recognized by faculty peers?

Assessment 6: Do faculty participate in university and professional service, student advising and other activities that enhance the effectiveness of the program?
C. Faculty Retention. Faculty holds academic status, have workloads, receive salaries, mentoring and support that promote productivity and retention.

Assessment 1: Are faculty salaries, academic and professional recognition evaluated to promote faculty retention and productivity?

Assessment 2: What is the rate of faculty turnover?

STANDARD 6: OUTREACH TO THE INSTITUTION, COMMUNITIES, ALUMNI, AND PRACTITIONERS

The program shall have a record or plan of achievement for interacting with the professional community, its alumni, the institution, community, and the public at large.

INTENT: The program should establish an effective relationship with the institution, communities, alumni, practitioners and the public at large in order to provide a source of service learning opportunities for students, scholarly development for faculty, and professional guidance and financial support. Documentation and dissemination of successful outreach efforts should enhance the image of the program and educate its constituencies regarding the program and the profession of landscape architecture.

A. Interaction with the Profession, Institution, and Public. The program represents and advocates for the profession by interacting with the professional community, the institution, community and the public at large.

Assessment 1: Are service-learning activities incorporated into the curriculum?

Assessment 2: Are service activities documented on a regular basis?

B. Alumni and Practitioners. The program recognizes alumni and practitioners as a resource.

Assessment 1: Does the program maintain a current registry of alumni that includes information pertaining to current employment, professional activity, post graduate study, and significant professional accomplishments?
Assessment 2: Does the program engage the alumni and practitioners in activities such as a formal advisory board, student career advising, potential employment, curriculum review and development, fund raising, continuing education etc.?

STANDARD 7: FACILITIES, EQUIPMENT, AND TECHNOLOGY

Faculty, students and staff shall have access to facilities, equipment, library and other technologies necessary for achieving the program’s mission and objectives.

INTENT: The program should occupy space in designated, code-compliant facilities that support the achievement of program mission and objectives. Students, faculty, and staff should have the required tools and facilities to enable achievement of the program mission and objectives.

A. Facilities. There are designated, code-compliant, adequately maintained spaces that serve the professional requirements of the faculty, students and staff.

Assessment 1: Are faculty, staff and administration provided with appropriate office space?

Assessment 2: Are students assigned permanent studio workstations adequate to meet the program needs?

Assessment 3: Are facilities adequately maintained and are they in compliance with ADA, life-safety and applicable building codes? (Acceptable documentation includes reasonable accommodation reports from the university ADA compliance office and/or facilities or risk management office.)

B. Information Systems and Technical Equipment. Information systems and technical equipment needed to achieve the program’s mission and objectives are available to students, faculty and other instructional and administrative personnel.

Assessment 1: Does the program have sufficient access to computer equipment and software?
Assessment 2: Is the frequency of hardware and software maintenance, updating and replacement sufficient?

Assessment 3: Are the hours of use sufficient to serve faculty and students?

C. Library Resources. Library collections and other resources are sufficient to support the program’s mission and educational objectives.

Assessment 1: Are collections adequate to support the program?

Assessment 2: Do courses integrate library and other resources?

Assessment 3: Are the library hours of operation convenient and adequate to serve the needs of faculty and students?

2.7 Baldrige National Quality Program (Education Criteria for Performance Excellence)

http://www.ihi.org/knowledge/Pages/OtherWebsites/BaldrigeNationalQualityProgram.aspx
Institution (PUPR) notifies LAAB its intention to apply for initial accreditation at least four months before the anticipated visit.

PUPR program prepares for next accreditation.

PUPR accredited program submits an annual report to allow LAAB to monitor the program's continuing compliance with accreditation requirements.

LAAB officially notifies PUPR its action with a letter, with copies to the program administrator and visiting team.

The visiting team conducts the visit, prepare a complete report in draft form, and decide on an advisory recommendation to LAAB on the program's accreditation status.

Within 15 days following receipt of the team report, PUPR shall submit its institutional response (substantive comments and corrections) to the accreditation manager.

Within ten days following the visit, the visiting team chair completes final editing and sends copies to the other team members and the accreditation manager, who review the report.

LAAB will consider the report at the next scheduled meeting (typically February or August). The decision will be based upon the program's self-evaluation report, annual reports, visiting team report, and institutional report.

The team report and institutional response are sent to the LAAB members at least three weeks before the next scheduled LAAB meeting.

Institution submits a self-evaluation report (SER) to achieve candidacy status.

Institution undergoes a program review, considered a mini accreditation visit where LAAB reviews the report and conduct a one to two days visit to the program. LAAB will vote on whether to grant a program candidacy status.

After achieving candidacy status PUPR President submits an invitation for accreditation at least four months prior to the review.

Institution submits progress reports to LAAB annually and pay an annual sustaining fee.

At least 45 days before the visit the program submits' two copies of the SER to the ASLA accreditation manager and one copy of the SER with proposed visit schedule to each member of the visiting team.

Within 15 days following receipt of the team report, PUPR shall submit its institutional response (substantive comments and corrections) to the accreditation manager.
3. REGULAR OFFICE PROCESSES

1. Admissions process
2. Mentoring and enrollment process
3. Student Retention, Orientation and Educational Services Process
4. Students’ Academic Achievement Evaluation Processes
5. Honor Program Process
6. Cooperative Educational Program Process
7. Budget Preparation Process
8. Financial Aid Process
9. Student Certification for Graduation Process
10. Faculty Development Program Process
11. Center for Professional Education and Training (CPET) Process
12. Faculty Evaluation Process
13. Evaluation of the Learning Resources Center (Library) Process
14. Office of Human Resources: Retaining and Recruiting Process
15. Purchasing Process
16. General Services and Facilities Process
17. Information Systems Process
18. WEB Page
19. CEDUP
3.1 ADMISSIONS PROCESS

Admissions policy and procedures at PUPR are defined in the undergraduate and graduate catalogs. The procedures call for the candidate student to apply for admission by filing an application. Upon proper completion of all admission requirements, the applicant will then be admitted to the program of studies chosen, and is authorized to register.

The admissions office, in the fulfillment of its responsibilities, carries out several activities throughout the academic year to stimulate high school students to consider PUPR as their first alternative to continue higher education. The first activity is a series of scheduled visits to High Schools, public and private, throughout the island, with emphasis in the Metropolitan area of San Juan – San Juan proper, Bayamón, Carolina, Guaynabo, Trujillo Alto, Cataño and Toa Baja – with a population of over 1.6 million people. The second one is an annual event named “Casa Abierta” or Open House. To this event are invited all 12th grade students from all over Puerto Rico, their teachers and parents. The purpose of the activity is to provide the opportunity to the visitors to observe closely the campus, laboratories, administration and sports facilities and hear about the program of interest. Thirdly, PUPR also conducts a promotion campaign in radio, movie theaters and newspapers. Also, PUPR, representatives visit industries and government agencies to promote the programs among adult working people.

The admissions process is diagrammed in figure II-3.1-A. Assessment instruments are provided in Appendix M-A.

The Director of the Admissions Office is responsible of the administration of this process. This person, in close coordination with the Associate VP of Enrollment Management, is responsible of assessment and improving the process on a continuous basis. The Director will inform in the Annual Report the progress achieved and the new objectives for the coming year.
Visits to High Schools

Open House Activity

Radio, Movie Theaters, Television, and Newspaper Promotion

Visits to Industry and Government Agencies

EVALUATE THE PROCESS EVERY THREE YEARS

Evaluate the process every three years

Send the student a questionnaire to identify the reason for not enrolling

Send the student a questionnaire to identify the reason for not enrolling

Send application to revision committee and send letter to applicant.

Confirm all assigned official have evaluated applications.

Is student admitted to PUPR?

Was a letter sent to applicant confirming admission to PUPR?

Send a letter confirming admission to PUPR

Was the student asked the reason why did not enroll?

Prepare a statistical report informing the reasons for not enrolling

Prepare a Report of all students enrolled.

Send application to revision committee and send letter to applicant.

Did PUPR receive the reply?

Was the student enrolled?

NO

YES

NO

YES

YES

NO

YES

YES

NO

YES

NO

YES

Prepare a Report of all students enrolled.
3.2 MENTORING AND ENROLLMENT PROCESS

Polytechnic University of Puerto Rico, in its aim to fulfill its mission, instituted a program to evaluate advice and monitor students in a manner consistent with program objectives.

The large majority of students coming from High School are enrolled in a preparatory course program consisting of a maximum of 24 credit-hours. All students are evaluated, advised and monitored consistent with the objectives of this program, specially designed for high school students with deficiencies in Mathematics, Spanish, English or Science, with particular attention to those identified as high risk students.

After completing the 24 credit-hour remedial component students pass to a mentoring program, for the next two years under the supervision of the counseling office. During this two year period, the student should take and approve the first 72 credit-hours defined in the catalog of the program chosen. The students are evaluated, advised and monitored by professional counselors. When the student enters the junior level (72-108 credit hour range) and until his graduation, the evaluation, advise, and monitoring is performed by a faculty member of the chosen program.

In all three levels, prior to the enrollment every term, the student is required to visit the mentor or advisor to coordinate the academic load he/she will be enrolled in and obtain authorization accordingly. This process is illustrated in the Figure II-3.2-A. This process fulfills the following functions.

✓ It assures the student is well informed about his/her achievement in the courses passed.

✓ The student is aware that someone is observing closely his/her performance that is ready, willing, and able to intervene in the solution of any problem that may arise and that may affect his/her the academic performance.
✓ The student-mentor interaction is an important factor in the development of the necessary rapport between students and faculty members.

✓ Reduce the probability of enrolling a student in a course without having passed the prerequisites after being informed about the correct options available to him/her to zero.

The student mentoring system counts with computerized statistical analysis of the student qualifications, course after course. The mentor has access to: a student summary; a detailed quarterly review, from the first term to the last; information about the gatekeeper and the bottleneck courses; and a set of achievement indexes.

The purpose of the computerized statistical analysis was to design and implement an information system to aid the mentors perform their work. The system is easily available, maintained, and does not require extensive user training. The system complies with the student Privacy Act.

The student mentor is the person responsible of providing the student the most accurate and informative advice about the academic achievement every term. The mentoring and enrollment process will be evaluated annually by both the mentors and the students using the instruments provided in Appendix M-B.
MENTORING AND ENROLLMENT PROCESS

Figure II-3.2-A
Polytechnic University of Puerto Rico adopted, since the very moment it came to existence, the policy of flexible admission. The purpose was to provide students from high school interested in studying engineering, architecture, land surveying or management who did not perform at the maximum of their capacities, the opportunity to recover from, or makeup for a poor academic achievement during the high school three year period. To this effect, the Student Preparatory and Retention Program were institutionalized in 1988 to use resources through an integrated approach. Four main activities were incorporated in the program to help students to overcome those deficiencies from high school that limit or impair their probability to succeed at the university academic level. These activities were: (1) preparatory courses; (2) tutorial services; (3) professional counseling; (4) student support services. In January 2002 the program was reorganized and the supervision of the activities was transferred to the Dean of Arts and Science from the Dean of Students. A comment about each activity follows.

1. Preparatory courses: All students admitted to an academic program must show evidence that they have acquired the academic abilities and skills necessary to progress through the major. Those not demonstrating the complete acquisition of these abilities and skills (as reflected by the results in PUPR’S placement test, previous university experience, or other tests or criteria) will be required to take up to a maximum of 24 credit-hours of preparatory courses. These courses are designed to help the students to overcome deficiencies in Spanish, English as a second language, Mathematics and Science. These courses are additional to the number of credit-hours required or specified for the awarding of a degree. This component will be assessed course by course and as a whole using the corresponding instruments. (See Appendix Q-F).
2. Tutorial services: This activity, provided free of charge to all students admitted from high school, on a voluntary basis, has the objective to retain students after they reach the competency level necessary to compete successfully in the different university level courses they are required to approve. Professional counseling: Diversified activities such as conferences about different themes or subjects regarding needs that groups of students may have, psychometric tests, individual and group counseling, academic assistance and psychological assistance are regularly provided.

3. Student Support Services: Supported by federal funds from the U.S. Department of Education, provides tutorial services, counseling, and cultural activities to two hundred thirty (230), high risk, disadvantaged, low income, first generation with university level studies and/or physically handicapped students every year. This yearly group is composed by 140 new enrollments from high school students who had participated in previous years.

The selection criteria are the following.

- **First priority** = GPA greater than 2.50/4.00, low income and first generation with university level studies
- **Second priority** = GPA greater than 2.50, low income and physically handicapped students

Additionally, about 50 to 75 students who participate in this activity as part of the 150 chosen students during a given year may continue participating annually on a voluntary basis until he/she graduates.

The results of the four activities are evaluated every academic year for continuous improvement. This is diagrammed in Figure II-3.2-A.

The Director of the Management of Retention and Orientation Office, in close coordination with the Dean of Arts and Sciences is responsible of running this process and of its assessment using the instruments provided in Appendix M-C. The main idea behind this process is to increase the retention rate of the students admitted, particularly during their first year.
3.4 STUDENT ACADEMIC ACHIEVEMENT EVALUATION PROCESS

The general policy and procedures to evaluate the student academic achievement depends heavily on the ability to process the academic information generated in the classroom. Student retention probationary status, suspension and permanent dismissal are linked to the evaluation of the student by the professor, the transmittal of the grades to the Registrar’s office, and entering the grades in the student’s record, so that the student’s achievement statistics may be produced. PUPR requires that every student be evaluated annually if he/she pays full tuition, or every quarter if he/she receives financial aid. The process is diagrammed in Figure: II-3.4-A, II-3.4-B and II-3.4-C.

The qualitative element of the retention index deals with the minimum GPA required qualifying for financial assistance taking into consideration the accumulated number of credit-hours passed. The quantitative element is the ratio of passed credit-hours vs. the total credit-hours intended. This ratio should be higher than 66%.

The Financial Aid Office Director is responsible for evaluating every term all the students receiving financial aid. The Director is responsible for amending the procedure to conform it to the latest applicable federal law amendments. This aspect is covered in more detail in the Financial Aid Process. Those students who do not receive federal financial aid are under the purview of the Registrar. The Registrar will evaluate these students every academic year to observe the progress in their academic achievement. Both officials will inform in their respective annual reports the progress achieved. The assessment will be conducted using the instruments provided in appendix M-D.
A large number of admitted students from High School require taking some of the preparatory courses. Their high school academic records are analyzed to diagnose their performance in Spanish, English, Science and Mathematics. Students are authorized to enroll normally in four preparatory courses during the fall term based on the information submitted. During the first week of classes diagnostic tests in Spanish, English and Mathematics are administered to all students enrolled coming from High School. Every student that obtains a rate of 80% or higher is moved to the next course in the sequence. The progress achieved by this group is evaluated after every term. Their CBEET is analyzed to determine the weak areas. The large majority of the enrolled students follow the regular preparatory and retention program. Did the student receive a grade of C or higher in the course? YES NO Did the student pass all the needed preparatory courses? 90 Students may continue participating in the SSSA on a voluntary basis if authorized. 140 high risk, disadvantaged, low income first generation with university studies students are chosen every year to participate in the Student Support Services activity (SSSA). Student is authorized to enroll in courses proper of the program of study chosen. The process is examined and revised every year. Student enrolls in the next set of preparatory courses.
After one year suspension, student is readmitted on probation P3 one year.

Is the GPA lower than the retention rate?

Student is suspended for three academic years.

After three years suspension, the student may be readmitted on probation for one last opportunity.

Is the GPA lower than the retention rate?

Student recovers his/her good standing.

This procedure is revised every time amendments to the federal law are passed but never less frequently than every three years.

Student is permanently dismissed.

STUDENT ACADEMIC ACHIEVEMENT PROCESS (cont’d)
Figure II-3.4-B
Students’ Academic Achievement Process
Figure II-3.4-C
**3.5 HONOR PROGRAM PROCESS**

PUPR awards a Diploma with honors to any student who is certified for graduation and additionally meets the following achievement criteria:

Must have completed at PUPR not less than 65% of credit hours required for graduation

- Must have earned, at PUPR, an overall (including all attempted credit hours) grade point average of 3.250-3.499 for Cum Laude; 3.500-3.899 for Magna Cum Laude; 3.900-4.000 for Summa Cum Laude.
- Based on the 3.250 GPA, aforementioned, the Honor Program recognizes all students, starting with those admitted from High School and thereafter until graduation, who maintain a GPA over the 3.250/4.000 lower limit as honor students.

These students participate in a series of special activities appropriately designed for them and actively participate in the classroom forming a Committee with the assignment to advise the professor about the progress the classmates are achieving and helping the classmates following the instructions given by the professor.

The process is diagrammed in Figure II-3.5-A and assessed using the instruments provided in appendix M-E.

The Director of the Honor Program has the responsibility of managing the program. With the help of the Registrar identifies all honor students in each class the first week of each term. The professor, with this information on hand, organizes the committee in every one of his/her classes.
START

Freshmen students to senior students are enrolled every trimester until graduation

The Director of the Honor Program in coordination with the Deans and Department Heads Program, speeds academic offerings for the Honor Students

Does the student have GPA > 3.25?

YES

The student automatically is recognized as a member of the Honor Program and receives a letter from the Director of the Program welcoming him/her to participate as a member

The Registrar’s Office identifies all Honor Students attending each class at the beginning of the trimester

Every professor organizes the Honor students in his/her class as an advisory Committee to help in assessing the teaching/learning process

The Professor designs the ways the Honor Student Committee will help him/her in the classroom

Formative classroom assessment instruments are design by the professor and is assisted in administering them by the Honor Student Advisory Committee

NO

Follows the regular path until he/she recovers the GPA ≥ 3.25 barrier

The Director of the Honor Program in coordination with the Deans and Department Heads Program, speeds academic offerings for the Honor Students

The Director of the Honor Program in coordination with the Vice-President of Enrollment Office, elaborates a program of special activities for the Honor’s Students

Honor Students helps group leaders, on a voluntary basis, to practice work in groups (teamwork) in the classroom every year until graduation

Honor Students Advisory Committee helps in the analysis and evaluation of the surveys in the classroom every term

THE HONOR STUDENTS PROGRAM

Figure II-3.5-A
3.6 COOPERATIVE EDUCATION PROGRAM PROCESS

The Cooperative Education Program was implemented to provide students with opportunities to work off-campus as professional assistants related to their academic majors or career goals. It allows students to acquire essential practical skills by being exposed to the reality of the world of work beyond the boundaries of the campus.

Employers and PUPR jointly provide students with meaningful high quality work experience through part time/full time employment. To qualify for the program, the student must be within the range of 90 to 155 credit hours passed, have a general point average (GPA) of 2.50/4.00 or higher, and be enrolled in the course COOP 3010.

The modalities of the program are: (a) students work during the day and study during the evening, (b) students work as a full time employee during the summer, or (c) students work six (6) months as full time employee and study the next six (6) months as full time student.

The COOP Program Process is described graphically in Figure II-3.6-A. It is subject to evaluation every year by the Director of the Program as part of the annual report using the instruments provided in Appendix M-F.
COOP PROGRAM PROCESS
Figure II-3.6-A

START

Has the Student Passed 90 ch or more?

Yes

No

Wait until Pass 90 ch

COOP Program maintains a bank of employers

Employers contact PUPR through different Means: telephone, fax, e-mail and letter

The COOP Program is revised annually for continuous improvement

Employee visits COOP Program for orientation

Student brings Resume and is instructed how to improve Resume

Student files application and signs agreement. Enters bank of students

COOP Program matches student interests with employer’s requirements

COOP Program sends an employer six to fifteen resumes for evaluation in reply to a request

COOP Program advises student about how to prepare himself for the interview in large groups, small groups or individually

Grades are delivered to the Registrar

Once the student finishes his work is evaluated by his supervisor, the academic Department Head and the Director COOP Program

A contract is signed by the parties

Student enrolls in COOP Program after being chosen by employer

Employer interviews students. Identifies a candidate and informs COOP Program the student chosen

Is the Employer the Federal Government?

Yes

No

The term of the employment is not limited. The student needs to move to the states for six months to work and to study six months every academic year. GPA must be over 3.00/4.00

The job fair is held annually in October. All graduation candidates are invited to participate

Student’s name remains in the COOP student bank and he may be assigned to a different employer. Students who worked for federal government may continue working for them until graduation and afterwards may be hired with preference

The term of the employment is not limited. The student needs to move to the states for six months to work and to study six months every academic year. GPA must be over 3.00/4.00

Employer informs COOP program the students he wants to interview either at the plant or at PUPR

Is the Employer the Federal Government?
3.7 BUDGET PREPARATION PROCESS

The office of the Vice President for Administration and Finance sends a memorandum with instructions, time schedule and the forms, early in January of each year, to every office or Department, to submit a budget request for the next fiscal year that runs from August 1 to July 31 of next year.

Every office or Department determines the budget for the next fiscal year and submits it electronically and in paper to the office of the Vice President for Administration and Finance. This office consolidates all the requests made and compares the total expenses with the projected income for the same period.

Thereafter, meetings are held with the different Directors to analyze their budget proposals and make the necessary adjustments until a final agreement is reached. The Vice President for Administration and Finance prepares the institutional final version and submits it to the President and to the Board of Trustees for final approval. Once the Board of Trustees authorizes the budget, the Vice President for Administration and Finance sends the Authorized Version to every office or department. The office of the Vice President for Administration of Finance maintains control of the budget. The cycle is repeated every year. This process is diagrammed in Figure II-3.7-A.

The Controller is the person responsible of assessing this process. To do so the Controller will use the instruments provided in Appendix M-G and will do it annually.
Note: This cycle is repeated every year starting in January for the next fiscal period which starts in August 1 to July 31 of next year.
3.8 FINANCIAL AID PROCESS

The student who requires financial aid must complete the federal student aid Application form of the U.S. Department of Education and files it through Internet. The application is analyzed carefully to confirm that all the required information and attachments are included. As a result of this evaluation, the USDE prepares two reports: the Institutional Student Information Report (ISIR)-electronically transferred to PUPR-and the Student Aid Report (SAR)-mailed to the student.

PUPR, after receiving the ISIR, prepares the financial aid packet for each one of those students who qualify. The student is enrolled three times a year: corresponding to the fall, winter and spring terms. The tuition and corresponding fees are charged to the financial aid assigned. It is required that the student qualifies every term.

The student is required to apply for financial aid every year during the winter term. For detailed process see the diagram. (Figure II-3.8-A).

This process is under the direct supervision of the Financial Aid Office Director who responds to the Associate Vice President for Enrollment Management. The Director is the person responsible of administering the federal funds assigned according to the latest rules and regulations issued by the federal government and demonstrates to the Institution that every qualifying student receives the corresponding allotment. The process will be assessed by means of the instruments presented in Appendix M-H. The Director will inform the findings of the assessment in the annual report.
FINANCIAL AID PROCESS

Figure II-3.8-A
MENTORING AND ENROLLMENT PROCESS
Figure II-3.8-B

START

INPUTS

Student visits office of mentor

Mentor runs computer program to generate statistics from student's academic record

Mentor authorizes courses student will be enrolled in

Student goes to the enrollment line and get registered

Mentor confirms students is enrolled as authorized

Is the student enrolled in a course having the authorization?

Yes

Student attends classes authorized

NO

Student is required to withdraw from the course where its prerequisites are not satisfied and was not authorized to enroll in
3.9 STUDENT CERTIFICATION FOR GRADUATION PROCESS

Candidates for bachelor’s degree who have completed 80% or more of the credit hours required for graduation must apply for graduation. The application must be completed and graduation fee paid no later than the date specified in the academic calendar. Applications are obtained at the Registrar’s office. The candidate should have the clearance of the Library, the financial aid office and the finance office prior to filing the application with the Registrar.

The student transcript is analyzed by the mentor and Registrar at the moment when the application is filed. Every component and sequence detailed in the student program according to the applicable catalog is verified. After presumably all academic requirements are met the Department Head and Faculty evaluate the student record. In the event that it is confirmed the student has met all academic requirements he/she is confirmed for graduation. Whenever a deficiency is identified the student is required to satisfy it.

This process is diagrammed in Figure II-3.9-A. The instruments used are provided in Appendix M-I.

The primary responsibility of the student certification for graduation process belongs to the Registrar. The Program Head and the mentor provide advice in confirming the academic requirements are fully satisfied.
Student files Application for graduation with the Registrar following instructions in catalog

Mentor runs analysis to confirm the requirements still not satisfied at the moment of filing application

Student satisfies the requirements indicated by mentor and Registrar

Mentor and Registrar confirm all requisites for graduation are satisfied

The Department Head and faculty evaluate the student record

NO

Are the minimum requirements for graduation met?

YES

Requirements not met are identified and student is required to satisfy them

Student is certified for graduation, informed in writing about it, and invited to commencement.

STUDENT CERTIFICATION FOR GRADUATION
Figure II-3.9-A
3.10 FACULTY DEVELOPMENT PROGRAM PROCESS

The PUPR Faculty Development Program Office (FDPO) responds to the Dean of Academic Support. The Faculty Development Program Office’s mission is to stimulate and help the faculty members to acquire the knowledge and skills needed to generate the highest quality of teaching-learning experiences in the classroom. This mission requires that faculty members keep abreast in their field of expertise and develop the pedagogical skills and attitudes essential to an effective teaching-learning process.

The Faculty Development Program has been structured in four basic components: (see Figure II-3.10-A and II-3.10-B).

1. Initial Orientation – it is the process by which new professors go through once they are recruited and allow them to adapt to the institution and to their new roles as university professors.

2. In – House Educational Activities – consists of all the workshops and seminars to be conducted in the institution. The Office prepares the seminar or course outline, contacts and recruits the human resources, organizes the activity and evaluates it and assigns the number of CEU’S to each activity.

3. External Continuing Education – this consists mainly of professor’s participation in professional conferences, conventions, and seminars related to their specific fields. It also addresses the socio-cultural development of the faculty. Each department will be able to send its professors to these activities. The faculty member will accumulate CEU’S for his/her promotion.

4. Career Development – this area focuses in the academic improvement of the faculty. Its purpose is to promote the achievement of higher academic degrees among professors.
Basic Components 1, 2 and 3 are programmed directly by the Director —Faculty Development Program Office every academic year in coordination with the academic Deans and the Department Heads.

To promote career development, PUPR has established a memorandum of understanding with universities that offer doctoral degrees in the areas of Engineering, Architecture, Management and Geomatic Sciences. At present there are two universities with agreements established in the continental USA; these are University of Missouri at Columbia (UMC) and Virginia Tech. PUPR is working to establish similar agreements with other universities to diversify the doctoral programs available for interested faculty members. In the island, several professors are pursuing their doctoral degrees at the University of Puerto Rico.

The Graduate Committee, appointed by the President and chaired by the Dean of Engineering recommends annually to the President the candidates to pursue the doctoral degree sponsored by the PUPR. The recommended candidates submit their application for admission to any university that offers the desired degree with preference to Virginia Tech, UMC and UPR. Once the candidate is admitted, a contract is signed for a three year term under which the doctoral candidate future relations with PUPR are defined and agreed upon.

The Faculty Development Program Director is responsible of administering the program and of conducting its assessment by using the instruments provided in appendix M-J.

In the annual report the Director will inform the results of the assessment performed.
Faculty members are invited to participate in the Faculty Development Program. Pertinent Office Heads are invited to lecture the group. Activities are held and evaluated. Professors join the Faculty. Teaching/Learning Outcomes are assessed.

In-house Educational Activities are programmed annually by the FDP Office and the number of CEU's is assigned to each activity. Educational Activities are carried out and evaluated. Faculty members follow up is given and CEU’s are accumulated for faculty promotion purposes. Outcomes are assessed.

Faculty members are invited to participate in the seminar or conference. Faculty member submits application to travel to a seminar. Faculty member submits a written report—financial and technical and the number of CEU’s to Office and Human Resources.

Career Development Program is administered by the office. Office receives application from faculty members. Applications are evaluated by Graduate Committee. Committee makes recommendations to the President of PUPR. President authorizes Human Resources to draft a contract.

Written information is reproduced. Faculty members are invited to participate. Human Resources are Contracted. Educational Activities are carried out and evaluated. Faculty members follow up is given and CEU’s are accumulated for faculty promotion purposes. Outcomes are assessed.

External Continuing Education Program is documented by the Office. Faculty members submit application to travel to a seminar. Faculty member is authorized to participate in the seminar or conference. Faculty member submits a written report—financial and technical and the number of CEU’s to Office and Human Resources.

Initial Orientation for newly appointed faculty members is planned every year by the FDP Office. Written information is reproduced. Activities are held and evaluated. Professors join the Faculty. Teaching/Learning Outcomes are assessed.

Faculties join the Faculty. Written information is reproduced. Activities are held and evaluated. Professors join the Faculty. Teaching/Learning Outcomes are assessed.

FACULTY DEVELOPMENT PROGRAM OFFICE
Figure II-3.10-A
Professor is admitted to a doctoral program

Professor signs the contract and enrolls in the doctoral program

Professor makes progress toward the Ph.D. and receives monthly economic support from PUPR

Professor finishes his academic work and obtains the Ph.D.

Professor returns to PUPR Campus with a Ph.D. to honor the contract

Professor reports annually the progress achieved until commencement
3.11 CENTER FOR PROFESSIONAL EDUCATION AND TRAINING PROCESS (CPETP)

The Center for Professional Education and Training has been created with the purpose of providing additional segments of our population other than traditional students, specifically the engineers and land surveyors who need to satisfy the continued education requirements to renew their license, with non-credit programs, seminars, conferences, symposiums and workshops that will keep them abreast of modern technological advancements and competitiveness in this rapid changing global market.

In order to provide a state of the art noncredit continuing education experience, the Center recruits experienced professors and consultants that are actively working in the fields of Land Surveying and Mapping, Engineering, Architecture, and Management.

The Center stimulates the creation of; and strengthens partnerships with business and industries; fosters faculty and alumni involvement; and reassures the quality and the continuity of our continuing education program by regular evaluations completed by the participants at the end of the course (s).

The Center for Professional Education and Training internal process is explained in Figure II-3.11-A.

The Director of the Center for Professional Education and Training is responsible of assessing this program using the instruments provided in appendix M-K. The findings will be informed in the annual report.
3.12 FACULTY EVALUATION PROCESS

The heart of any educational program is the faculty. All other matters are secondary to a competent, qualified, and forward-looking faculty that can give an overall scholarly atmosphere to the educational process and provide an appropriate role model for engineering, land surveying, architecture, landscape architecture, and management students.

The overall competence of the faculty may be judged by such factors as the level of academic training of its members; the diversity of their backgrounds; their non-academic professional experience; their experience in teaching; their ability to communicate fluently in English and Spanish; their interest in, and enthusiasm for developing more effective teaching methods; their level of scholarship as shown by scientific and professional publications; their registration as Professional Engineers, Land Surveyors, Architects, or management professionals; their degree of participation in professional, scientific and other learned societies; their participation in professional development programs; recognition by students of their professional acumen; and their personal interest in the student’s curricular and extracurricular activities; and their personal and social competencies that may prove the level of emotional intelligence.

As part of the Outcomes Assessment Program, it is required that every faculty member be submitted to the faculty evaluation process at least once a year. The purpose is, in the first place, to identify possible areas where he/she may need to improve and the necessary help is provided. Secondly, when the faculty member is required to be evaluated for promotion in rank or type of multi-annual contract.
The evaluation cycle starts in January and finishes in July of each year in accordance with the process described in Figure II-3.12-A. The Department Head is responsible of conducting the evaluation of the faculty members. The evaluation performed by the students is done at least once a year. The evaluations performed by the peers and by the Department Head are conducted at least once within the period specified in the Manual of Personnel for purposes of promotion in rank or type of multi-annual contract. The Department Head is responsible to submit annually to the Dean of Faculty those professors evaluated and recommended for recognition. The Dean of Faculty presents to the Administrative Board all the candidates submitted by the Department Heads in a meeting held during the summer each year. The instruments used are those provided in Appendix M-L.
EVALUATION OF FACULTY MEMBERS FOR PROMOTION OR TENURE
Figure II-3.12-A

START

Dean sends, in January of each year, a memorandum to Department Heads, with Criteria, forms and Calendar, to conduct evaluation of Faculty

Department Head determines the faculty members to be evaluated

Department Head appoints Department Evaluation Committee and reproduces all the materials needed

Department Head leads the evaluation process
1. Students Evaluation
2. Peers Evaluation
3. Admin. Evaluation
4. Department Committee Evaluation

Department Head conducts the analysis of the data gathered of each faculty member evaluated

Department Head writes the evaluation Report of each faculty member evaluated

Human Resources Office keeps a Record of the status of each Faculty member and in January of each year sends the Dean a list of all faculty members to be evaluated for promotion or tenure

Deans send all files signed by the President to the Human Resources Office for implementation of corresponding actions.

Deans attach all the completed forms needed to implement the recommendations approved.

President signs all evaluation reports approved by the Board

The Administrative Board holds a meeting to consider all the candidates submitted. The Dean presents all the cases and each one is voted individually

The Dean receives all the evaluation reports and submits a memorandum to the President indicating the faculty members evaluated and requesting a meeting of the Administrative Board to consider the evaluations

Department Head submits all the evaluations made with the corresponding recommendatio ns to the Dean of faculty in May of each year

Candidate evaluation is approved

NO

Faculty Member is informed about the decision taken by the Board and Human Resources implants the decision

YES
3.13 THE LIBRARY AND THE INFORMATION LITERACY PROGRAM

THE LIBRARY

The Library is an academic unit with the mission to offer the University community the best information resources and services available in order to achieve academic excellence and develop leaders with the knowledge and skills that will help them become successful professionals and responsible citizens. The Library of the Polytechnic University of Puerto Rico (PUPR) is specialized in the areas of Engineering, Geomatics Science, Architecture, Landscape Architecture, and Management to support the University’s Academic Programs.

INFORMATION LITERACY SKILLS AND THEIR RELATIONSHIP TO ACCREDITATION AGENCIES

Information Literacy is defined as follows:
According to The American Library Association (ALA) and the Association of College and Research Libraries (ACRL), “To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.”
The Middle States Commission on Higher Education defines the term as:
“…an intellectual framework for identifying, finding, understanding, evaluating, and using information. It includes determining the nature and extent of needed information; accessing information effectively and efficiently; evaluating critically information and its resources; incorporating selected information in the learner’s knowledge base and value system; using information effectively to accomplish a specific purpose; understanding the economic, legal and social issues surrounding the use of information technology; and observing laws, regulations, and
institutional policies related to the access and use of information.” Figure 1 represents what an information literate person is able to do with information.

Academic Libraries have Programs or Departments dedicated to the development of these skills in students as well as faculty. Accreditation boards include direct and indirect requirements related to Information Literacy skills development.

Following are the PUPR graduate student skills presented in the Institutional and Academic Plan Outcomes Assessment Plan 2009, page III–4–1 which, although not specific, are related to information literacy skills:

**PUPR Graduate Students Skills**

“The aim of the institutional level goals should be to develop students so that after graduation they:

a. start assuming positions of leadership

b. have acquired a vision as global citizens

c. are technologically competent individuals
d. have developed essential oral and written communication skills  
e. are critical thinkers  
f. are skillful in scientific and quantitative reasoning”

The PUPR programs are accredited by professional boards and associations. Following are the requirements related to Information Literacy from the accreditation institutions that visit the PUPR:

**Middle States Association – MSACS/MSCHE**


**Standard 11 – Educational Offerings**

Several skills collectively referred to as “information literacy,” apply to all disciplines in an institution’s curricula. These skills relate to a student’s competency in acquiring and processing information in the search for understanding, whether that information is sought in or through the facilities of a library, through practice, as a result of field experiments, by communications with experts in professional communities, or by other means. Therefore, information literacy is an essential component of any educational program at the graduate or undergraduate levels.

These skills include the ability to:

- determine the nature and extent of needed information;
- access information effectively and efficiently;
- evaluate critically the sources and content of information;
- incorporate selected information in the learner’s knowledge base and value system;
- use information effectively to accomplish a specific purpose;
- understand the economic, legal and social issues surrounding the use of information and information technology; and
• observe laws, regulations, and institutional policies related to the access and use of information.

Fundamental Elements of Educational Offerings
An accredited institution is expected to possess or demonstrate the following attributes or activities. These elements also apply to all other educational activities addressed within Standard 13.

• learning resources, facilities, instructional equipment, library services, and professional library staff adequate to support the institution’s educational programs;
• collaboration among professional library staff, faculty, and administrators in fostering information literacy and technological competency skills across the curriculum;
• programs that promote student use of variety of information and learning resources;

Optional Analysis and Evidence
In addition to the evidence inherent within or necessary to document the fundamental elements above, the following, although not required, may facilitate the institution’s own analysis relative to this accreditation standard:

• evidence of local and remote information resources, access structures, and technologies adequate to support the curriculum;
• evidence of information literacy incorporated into the curriculum with syllabi, or other material appropriate to the mode of teaching and learning, describing expectations for student’s demonstration of information literacy skills;
• evidence of accessible reference tools to ascertain where relevant materials exist and are located;
• assessment of information literacy outcomes, including assessment of related learner abilities;
• evidence of an adequate policy and process, tailored to the mission and goals of the institution, for the development and management of information resources;

**Standard 12 – General Education**

General education is an important component of all undergraduate and some graduate higher education degree programs. All undergraduate and those graduate programs that include a general education component are expected to meet this standard and the related Fundamental Elements. Graduate programs that do not include general education components should ensure Institutions should identify and provide a recognizable core of general education that:

• express the educational philosophy of the institution for each undergraduate degree program or cluster of degree programs;
• enhances students’ intellectual growth; and
• draws students into new areas of intellectual experience, expanding their cultural and global awareness and sensitivity, and preparing them to make enlightened judgments outside as well as within their academic specialty.

What are presented here as general education skills, are not necessarily distinct and apart from each other. There is an inherent relationship among these skills. This interrelatedness is evident is the concept of “information literacy,” which embraces all of the specific general education skills (see Context, Standard 11).

**Optional Analysis and Evidence**

In addition to the evidence inherent within or necessary to document the fundamental elements above, the following, although not required, may facilitate the institution’s own analysis relative to this accreditation standard:

• …
• evidence of articulated expectations of student learning outcomes for written communication, speech communication, quantitative reasoning,
scientific reasoning, information literacy, technological competence, and critical analysis and reasoning for all undergraduate degree students;

- ...

**Standard 13 – Related Educational Activities**

Distance or Distributed Learning

Optional Analysis and Evidence

In addition to the evidence inherent within or necessary to document the fundamental elements above, the following, although not required, may facilitate the institution’s own analysis relative to this accreditation standard:

- ...

- evidence of how the institution assures that students and faculty have sufficient technological skills and those information literacy skills that are necessary to access and to use effectively the information resources available at a distance;

- ...

Accreditation Board for Engineering and Technology – ABET

http://www.abet.org/Linked%20Documents-UPDATE/Criteria%20and%20PP/E001%202010-11%20EAC%20Criteria%202011-03-09.pdf


Engineering programs must demonstrate that their students attain the following outcomes:

- ...

(f) an understanding of professional and ethical responsibility

(g) an ability to communicate effectively

(i) a recognition of the need for, and an ability to engage in life-long learning

(j) a knowledge of contemporary issues

- ...
National Architectural Accrediting Board – NAAB

2009 Conditions for Accreditation, page 16
1.2.5 Information Resources: The accredited program must demonstrate that all students, faculty, and staff have convenient access to literature, information, visual, and digital resources that support professional education in the field of architecture.

Further, the accredited program must demonstrate that all students, faculty, and staff have access to architecture librarians and visual resources professionals who provide information services that teach and develop research, evaluative, and critical thinking skills necessary for professional practice and lifelong learning.

Landscape Architectural Accrediting Board – LAAB
http://www.asla.org/accreditationlaab.aspx#_LAAB_Documents

Self-evaluation report format 2010
Standard 7 C. Library Resources

3. How do instructional courses integrate the library and other resources?

International Assembly for Collegiate Business Education – IACBE

3.3 General Knowledge and Skills
Excellence in business education at the undergraduate level requires a broad educational background on which to base collegiate business studies.

…

Description
A broad-based education normally includes (i) general knowledge in the traditional areas of the liberal arts such as the humanities, arts, and social and physical sciences, and (ii) general skills areas such as written and verbal
communication skills, analytical skills, appropriate language skills, quantitative skill, computer and information technology skills, and information literacy skills. The information Literacy Skills Development Program is part of the Public Services Department at the Polytechnic University of Puerto Rico Library. The aim of the Program is to help students develop information literacy skills. Figure II-A presents a flowchart for the development and application of a course integrated activity.
The professor of a course examines the course syllabus objectives and finds an activity or assigned work that is compatible with the development of information literacy skills for the students. The professor and the librarian identify the skills they want to develop and the activities to do it. The librarian designs the final activity including the assessment exercise. Information literacy skills are specific in some course syllabus and may be added to some other courses. However, it is not specifically incorporated in the institutions student’s learning/success outcomes.
Figure II-B

Requirements made by the Licensing or Accreditation Agencies to be satisfied by the PUPR General Library.
Figure II-C

Service to the four PUPR academic schools will be provided by the Learning Resource Center (Library).
Figure II-D

Academic Programs requirements that the General Library should satisfy.
SERVICES TO FACULTY
Figure II-E
SERVICES TO STUDENTS
Figure II-F
Library Services

Faculty
- Verification of available information resources
- Information resources catalogs, evaluation and recommendations for acquisitions
- Professional and academic topics update by reading journals and other periodical academic publications
- Coordination of Information literacy activities and workshops

Faculty, Students and Employees:
- Search for information resources in the catalog (e-library) and databases
- Use and consultation of available resources
- “Ask the Librarian” e-mail inquireservice at referencistas@pupr.edu
- Library Blog
- Request and loan of external information resources using interlibrary loan services
- Orientation and references services by librarians
- Open stacks browsing
- Circulation resources borrowing
- Reference area resources like dictionaries, encyclopedias, index, standards, codes, bibliographic guides, professional exams reviews and printed periodicals
- Rare Book Collection
- Computers at the Reference Area
- Specialized software like AutoCad and Cartography
- Printers, photocopiers and scanners
- Individual and group study areas
- Information literacy laboratories
- Projection, meeting and conference rooms

Students
- Textbooks loans
- Computers and printing services at the Engineering and Science Support Center
- Use of group study rooms
- Information literacy workshops and activities

Figure II-G
3.14 OFFICE OF HUMAN RESOURCES: RETAINING AND RECRUITING PROCESS

The recruiting of new faculty members and administration personnel is a relevant and continuous activity in an ever growing academic institution. The retention of highly competent personnel with highly relevant experience, and outstanding academic preparation in the field of expertise, is always important. But the rules that govern the work place are changing. We are being judged by a new yardstick: not just how smart we are, or by our training and expertise, but also by how well we handle ourselves and each other. It is essential to demonstrate or prove the possession of excellent emotional intelligence competencies. See Figure II-3.14-A.

This yardstick is increasingly applied in choosing who will be hired and who will not, who will be let go and who will be retained, who will be passed over and who will be promoted.

The new rules predict who is most likely to become a star performer and who is most prone to derailing. The academic abilities are largely irrelevant to this standard. It focuses instead on personal and social competencies, such as empathy, initiative, adaptability, transparency, inspirational leadership, conflict management, team work and collaboration, change catalyst and others.

Studies of tens of thousands of working people, in callings of every kind, distills with unprecedented precision which qualities mark a star performer. And it demonstrates which human abilities make up the greater part of the ingredients for excellence at work—most especially for leadership.
Talked about loosely for decades under a variety of names such as: character, personality, soft skills and competences, there is at last a more precise understanding of these human talents, and a new name for them: emotional intelligence.

One instrument, developed by Dr. Carlos Andújar, will be used once to measure the emotional intelligence quotient (EQ) of all employees and potential ones after they apply for a job. (See Appendix N-A)

A second instrument that will be filled out every year is the regular performance evaluation of each employee who is a member of the Administration. (Appendix N-B). The Director of the Human Resources is responsible of seeing that all these evaluations are conducted and documented properly. The results will be informed in the Annual Report.

---

**Figure II-3.14-A**

Communication chart among the three major employee groups and the office of Human Resources.
3.15 PURCHASING PROCESS

Purchasing, in an orderly manner, all materials, services and equipment required for the daily operations with the necessary controls is essential. Interrupting an operation for the lack of some needed materials or replacement parts may result highly inconvenient. Monetary losses due to poorly controlled purchasing procedures are not acceptable. Long delays in processing a purchase order may provoke dangerously low inventories that may jeopardize the normal operations required to guarantee a healthy teaching-learning process.

The Purchasing Office is responsible of processing all the purchase requests received and the purchase orders issued to insure that the regular operations are within the authorized inventory levels. The administrative officers are responsible of generating their respective purchase requests on time to maintain their inventory levels. Also are responsible of filing the claims within the time frame of thirty (30) days established to eliminate the possibility of keeping in stock damaged materials or equipment which constitute a loss to the Institution.

The Purchasing Officer, jointly with the Deans and the Comptroller will establish the necessary controls to maximize the operation flexibility while at the same time reduce the possibility of having losses by any means to an absolute minimum. The Purchasing Process is described in Figure II-3.15-A and Figure II-3.15-B. The assessment instruments are provided in Appendix M-O.

In relation to any purchasing request concerning information technology items or equipment, the same must be submitted to the consideration of the Director of Information Systems for his endorsement. Regarding the Learning Resources Center (Library) it follows a purchasing procedure separate and distinct from the Purchasing Office described herein. The Library needs to document it fully and get its approval.
Administrative Office identifies at least three qualified suppliers for required services, materials or equipment, Department Head signs the Purchase Request.

Purchase Request is sent to the corresponding Dean for his/her approval.

Budget and Analysis Office receives Purchase Request and classify them by Deanship, Department or Office and price range, keeping a permanent record. Confirms the items are in budget and sign the Purchase Request.

Dean will carry out an investigation and adjudge responsibility in coordination with Purchase Officer.

Director of Accounting prepares monthly reports stating the status of P.O. processed.

Purchase Office confirms the Purchase Request is completed in all its parts and the office is ready to prepare a Purchase Order.

Vice President of Administration and Finance approves payment terms.

Is the purchase request complete in all its parts?

YES

Purchase Office prepares a Purchase Order.

NO

Director of Accounting & Payable pays P.O. according to payment terms and keep a record of payments made.

Purchase Office sends Purchase Order to potential suppliers

Purchase Office opens the BID, when necessary, receives proposals and sends the documents to the office that made the request to evaluate them. The office recommends awarding the BID to the lowest evaluated bidder.

PURCHASING PROCESS
Figure II-3.15-A
B

Is Purchase Request less than $200.00?

NO

Purchase Request is sent to the Vice President for Administration and Finance for his approval.

YES

A

Is Purchase Request less than $10,000.00?

NO

Purchase Request is sent to the President for his approval.

YES

Is Purchase Request related to Information Technology?

NO

Purchase Request is sent to the Purchase Office for its execution and bidding process, when necessary.

YES

Purchase Request is sent to Director of Information Technology for his approval.

B

PURCHASE PROCESS
Figure II-3.15-B
Among other things, an accredited institution is characterized by:
(a) a comprehensive facility of infrastructure master plan and facilities/infrastructure life-cycle management plan, as appropriate to mission, and evidence of implementation; (b) recognition in the comprehensive plan that facilities, such as learning resources fundamental to all educational and research programs and libraries, are adequately supported and staffed to accomplish the institution’s objectives for students learning, both on campuses and at a distance; (c) an educational and other equipment acquisition and replacement process and plan, including provision for current and future technology, as appropriate to the educational programs and support services and evidence of implementation.

The offering of all academic programs must be supported by adequate physical facilities, including office and classroom space, laboratories, library, computer, and shop facilities suitable for the scope of the program’s activities. Buildings and ground must be provided with reliable electric power, potable water, telephone system, internet, waste disposal systems, needed transportation equipment and gardening. The whole campus environment must be kept clean, safe and secure.
Figure II-3.16-A

START

1. Electrical Energy Supply System (Regular/Emergency)
2. Potable Water (Regular/Emergency) System
3. Buildings Integrity
4. Internal Streets, Parking Lots and Gardens
5. Security System
7. Transportation Fleet
8. Fences, Gates and Access Control Systems
9. Surrounding Public Streets

Annual Maintenance and Replacement Plan
Point of Connection to PREPA’s Electrical System/Power metered

Invoice Received and Processed for Payment

Step down transformer

240 V / 3 Ø / 60 cycle feeders

240 V / 3 Ø / 60 cycle breakers

220/110 V / 3 Ø / 60 cycle switchboards

240 V / 60 cycle / 1 Ø feeders to every one building

240 V / 1 Ø / 60 cycle Distribution panels in every building

Campus Street & Parking Lighting

480 V / 3 Ø / 60 cycle breakers

480 V / 3 Ø / 60 cycle feeders

Transfer Switch

Emergency Power Generator

Building lighting and wall receptacles in every building

Confirm the integrity of the system and confirm its capability to operate even during natural disasters or acts of terrorism.
Point of Connection to ASA water supply System/Water metered

Inspect integrity of the system and its operational capability even in emergencies or natural disasters

Water pipelines run to every building

Deep well Pump

Water quality and volume determined

Sewage Water Discharged to ASA Sewage System

Confirm that Permits Awarded by Department of Natural Resources are in force

Invoice Received and Processed for Payment

START
Note: Building integrity means that its structure, particularly the roof, and basements do not leak. Also, all doors, gates and windows are operational, capable of preventing unlawful penetration by intruders.

INSPECTIONS TO CONFIRM BUILDING INTEGRITY
Figure II-3.16-D
Inspect laboratories following written procedures in order to comply with local and federal authorities’ regulations

Inspect buildings, streets, parking lots and gardens for cleanliness and imperfections

Mow the grass monthly. Sweep the parking lots and streets as frequently as necessary

Collect the waste baskets every working day and dispose of the solid waste in the containers

The solid waste containers are emptied weekly

Recycle discarded electronic gadgets following written procedures

Recycle office paper following written procedure

All the inspections and repair work are performed having in mind the preparedness for emergencies such as hurricanes, earthquakes, fires, flooding or acts of terrorism.

SOLID, LIQUID AND WASTE DISPOSAL
Figure II-3.16-E
A Security Company is chosen and a contract awarded

Electronic Access Control System is designed, installed and put in operation

A 24 hour/7 days a week manned Control Room will record the surveillance of all campus access points

A group of policemen will patrol the Campus regularly and operate the main gates

Keep records of all incidents occurred in Campus and report them to the Associate VP Support Services

Monthly invoice is received and processed for payment
Water Supply, Pressure and Volume are adequate

Piping System, Valves, Hoses, Sprinkles, Alarm System are adequate

Written Evacuation Plan is in Place

Evacuation Routs are identified and Maps are displayed

All Required Licenses and Permits are up to Date

Evacuation Drills are Performed Periodically

Annual Maintenance and Replacement Plan

INSPECTIONS TO CONFIRM THE FIRE PROTECTION SYSTEM OF EACH BUILDING IS OPERATIONAL

Figure II-3.16-G
3.17 INFORMATION SYSTEMS PROCESS

Polytechnic University of Puerto Rico (PUPR), as an institution of higher education operates within the following constrains or frame reference.

a. The mission, goals, and objectives are developed and recognized by the institution with its members, and its governing body and are utilized to develop and shape its programs and practices and to evaluate its effectiveness.

b. Conducts ongoing planning and resources allocation based on its mission and uses the results of its assessment activities for institutional renewal. Implementation and subsequent evaluation of the success of the strategic plan and resources allocation support the development and change necessary to improve and to maintain institutional quality.

c. The personnel, financial, technical, physical facilities and other resources necessary to achieve its mission and goals are available and accessible. In the context of the institution’s mission, the effective and efficient uses of the institution’s resources are analyzed as part of ongoing outcomes assessment.

d. The system of governance clearly defines the roles of institutional constituencies in policy development and decision-making. The governance structure includes an active governing body with sufficient autonomy to assure institutional integrity and to fulfill its responsibilities of policy and resources development, consistent with the mission of the institution.
e. The administrative structure and services facilitate learning and research/scholarship, foster quality improvement, and support the institution’s organization and governance.

f. In the conduct of its programs and activities involving the public and the constituencies it serves, PUPR demonstrates adherence to ethical standards and its own stated policies, providing support to academic and intellectual freedom.

g. PUPR has developed and implemented an assessment plan and process that evaluates its overall effectiveness in: achieving its mission and goals; implementing planning, resource allocation and institutional renewal processes; using institutional resources efficiently; providing leadership and governance; providing administrative structures and services; demonstrating institutional integrity; and assuring that institutional processes and resources support appropriate learning and other outcomes for its students and graduates.

h. PUPR seeks to admit students whose interests, goals, and abilities are congruent with its mission.

i. PUPR provides student support services reasonably necessary to enable each student to achieve the institution’s goals for students.

j. The institutional, research, and service programs are devised, developed, monitored, and supported by qualified professionals.

k. The educational offerings display academic content, rigor, relevance, and coherence that are appropriate to its higher education mission. PUPR identifies student learning goals and objectives, including knowledge and skills, for its educational offerings.
The curricula are designed so that students acquire and demonstrate college-level proficiency in general education and essential skills, including oral and written communication, scientific and quantitative reasoning, critical analysis and reasoning, technological competency, and information literacy.

m. PUPR programs or activities that are characterized by particular content, focus, location, mode of delivery, or sponsorship meet appropriate standards.

n. Assessment of student learning demonstrates that UPPR students have knowledge, skills, and competencies consistent with institutional goals and that students at graduation have knowledge, skills and competencies consistent with PUPR’s and appropriate higher education goals.

Outcomes Assessment of every and each one of these constrains involves gathering and evaluating quantitative and/or qualitative information that demonstrates congruence between the mission, goals, and objectives and the actual outcomes of its educational activities. A powerful, reliable and state of the art information system is mandatory. Figure II-3.17-A illustrates the system PUPR has in place. The diverse administrative and academic information centers and their perspective servers are listed in tables 1 & 2 separately.

The information Technology Office provides all the technical assistance to assure itself that all the hardware operate satisfactorily. Each office or academic department that owns an information processing network is responsible of obtaining the most adequate software for the particular application and also obtaining the corresponding licenses.
INFORMATION SYSTEM PROCESS
Figure II-3.17-A
# Table 1

## Administration Servers and Principal Computer Programs

<table>
<thead>
<tr>
<th>Area of Concern</th>
<th>Servers</th>
<th>Computer Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Permanent Student Report under Custody of the Registrar</td>
<td>Dell Power Edge 2650</td>
<td>Cams</td>
</tr>
<tr>
<td>2. Financial Aid and Honor Program</td>
<td>Dell Power Edge 750</td>
<td>EDexpress File Server</td>
</tr>
<tr>
<td>3. Student Admission and Enrollment Process</td>
<td>Dell Power Edge 2650</td>
<td>Cams</td>
</tr>
<tr>
<td>4. Permanent Records of Employees and Faculty under Custody of Human Resources Office</td>
<td>Power Edge 2550</td>
<td>ADP</td>
</tr>
<tr>
<td>5. Budget Preparation and Control</td>
<td>Power Edge 2550</td>
<td>MAS 200</td>
</tr>
<tr>
<td>6. Payroll</td>
<td>Power Edge 2550</td>
<td>ADP</td>
</tr>
<tr>
<td>7. Scientific Research Awards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Purchasing and Inventory Records under custody of Purchasing Office</td>
<td>Power Edge 2550</td>
<td>MAS 200</td>
</tr>
<tr>
<td>9. Permanent Book Inventory Records under Custody of Librarian</td>
<td>DHCP Dell</td>
<td>Windows 2000 Server</td>
</tr>
<tr>
<td></td>
<td>1 BM P 615</td>
<td>Sissi – Dynix Unicorn 2003.1.5</td>
</tr>
<tr>
<td></td>
<td>File Server Dell</td>
<td>Windows 2000 Server</td>
</tr>
<tr>
<td></td>
<td>Print Server Dell</td>
<td>Windows 2000 Server</td>
</tr>
<tr>
<td>10. Internet</td>
<td>Power Edge 1300</td>
<td>Microsoft Proxy</td>
</tr>
</tbody>
</table>
# TABLE 2

## ACADEMIC COMPUTER NETWORKS

<table>
<thead>
<tr>
<th>ACADEMIC Department</th>
<th>Servers</th>
<th>Computer Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Civil Engineering</td>
<td>Dell Power Edge 5005C</td>
<td>Windows NT</td>
</tr>
<tr>
<td></td>
<td>Dell Power Edge 2600</td>
<td>Windows Server 2003</td>
</tr>
<tr>
<td></td>
<td>3. Servers Dell Power Edge 4400</td>
<td>Gentoo Linux</td>
</tr>
<tr>
<td></td>
<td>4. Server HP (mentor) Apollo Series 700</td>
<td>Gentoo Linux</td>
</tr>
<tr>
<td></td>
<td>5. Server Dell (L-302) Power Edge 750</td>
<td>Microsoft Academic Alliance</td>
</tr>
<tr>
<td></td>
<td>6. Server Dell (L302) Power Edge 2650</td>
<td>Microsoft Academic Alliance</td>
</tr>
<tr>
<td></td>
<td>7. Server Dell (L-302) Power Edge 2650</td>
<td>Microsoft Academic Alliance</td>
</tr>
<tr>
<td></td>
<td>8. Server Dell (L-308) Precision 360</td>
<td>Microsoft Off. MATLAB</td>
</tr>
<tr>
<td>3. Mechanical Engineering</td>
<td>Compaq Pentium II Xeon 400 mhz</td>
<td>License Server</td>
</tr>
<tr>
<td></td>
<td>Dell Power Edge 2800</td>
<td>License Server</td>
</tr>
<tr>
<td>4. Educational Technology Center</td>
<td>Power Edge 4400</td>
<td>MS Office</td>
</tr>
<tr>
<td>(ETC)</td>
<td>Power Edge 1300</td>
<td>Mathlab</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mathcad</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ghost</td>
</tr>
<tr>
<td>5. Architecture</td>
<td>Power Edge 1800</td>
<td>Windows 2003 Server</td>
</tr>
<tr>
<td></td>
<td>Dell Clone</td>
<td>Windows 2000 Server</td>
</tr>
</tbody>
</table>
3.18 WEB PAGE MODIFICATION PROCESS

The internet is a global system of interconnected computer network that interchange data by packet switching using the standardized Internet Protocol Suite. It is a network of networks that consists of millions of private and public, academic, business, and government network of local to global scope that are linked by copper wires, fiber-optic cables, wireless connectors and other technologies. The Internet carries various information resources and services communicated via the Internet. The web is a collection of interconnected documents and other resources linked by hyperlinks and a Uniform Resource Locator (URL’s). These documents may contain almost any combination of computer data including graphics, sounds, text, video, multimedia and interactive content including games, office applications and scientific demonstrations.

PUPR owns a website with the intent of maintaining it full of accurate, attractive, diverse and up to date information regarding our operation. To comply with this objective fully and effectively, a procedure is in effect.
3.18.1 PROCEDURE TO APPLY TO PUBLISH IN THE WEB SITE
(SEE THE FLOWCHART AND APPLICATION)

I. The applicant shall complete the corresponding information of the Application and submit it electronically to Outcomes Assessment Office (gvelez@pupr.edu) indicating the recording instrument employed as carrier.

II. The Outcomes Assessment Office will review the Application and the material attached to be displayed in the website. Obviously, the review includes the spelling but most important, the assurance that nothing spelled out contradicts or is in conflict with the licensing or accrediting agencies policies and criteria.

III. In the event that the recorded information cannot be sent through the e-mail due to the prevailing imposed limitations, the material shall be delivered through the internal mail or in person.

IV. The Coordinator of the Web page is responsible of reviewing the material mailed. If no changes are required the material will be authorized and mailed electronically to the office of Institutional Development, responsible of contacting the Webmaster.

V. In the event the material under review requires amendments, it will be mailed back to the applicant to perform the changes indicated. After the amendments are incorporated, the applicant will resubmit the application for approval.

VI. The office of Institutional Development will channel the applications in the same order which were received. However, the institutional priorities that govern the loading into the website are as follows:

   i. Academic Catalogs
   ii. Enrollment Process
   iii. Deadlines
   iv. On line applications
   v. Library – On line courses
   vi. Relevant news

VII. The Webmaster will manage all the applications submitted to him following strictly the Institutional Policies transmitted. He will not respond to applicant’s pressure nor answer any communications from him/her.
FLOWCHART 3.18-A
DESCRIBING PROCEDURE TO APPLY FOR PUBLISHING IN THE PUPR WEB SITE

Feedback

Academic Offices

Registrar

Administrative Offices

Outcomes
Assessment Office director Correctness of Content

Not all information require the Registrar's approval

Institutional Advancement Office Administers contract awarded to the Webmaster controlling time, costs, progress

WEBMASTER Actualize website in compliance with PUPR’s policies
Part III:

THE LEARNING OUTCOMES ASSESSMENT SYSTEM

1. The Course Level
   1-1 Design of the Course
   1-2 Professor
   1-3 Classroom and Environment
   1-4 Student Enrolled

2. Component or Sequence Level

3. The Program Level

4. The Institutional Level

5. PUPR School of Engineering Assessment MODEL

6. Outcomes Indicators, Standards, or Performance Criteria

7. References
1. THE LEARNING OUTCOMES ASSESSMENT SYSTEM
(COURSE LEVEL)

For decades the accreditation process was based on the assumption that if high quality inputs existed, high quality outputs would result. This approach provides data on what goes into the system, but very little data on what happens in the system and what comes out of it. Dissatisfaction with the focus on inputs led to the emergence of the outcome assessment movement, which emphasizes the importance of evaluating the outputs of higher education, such as student achievement, graduation, and employment. However, unfortunately, knowledge of educational output alone does not provide a basis for determining problems in the teaching-learning process. Polytechnic University of Puerto Rico, recognizes the importance of understanding the teaching-learning process, and wants to provide significant attention to it. The teaching-learning process essentially was ignored for centuries due to the amorphous nature of what happens to students when they navigate through the process but during the several last decades this subject has been examined very seriously. (3, 4, 7, 9, 9a, 9b)

The Outcomes Assessment of the expected student achievement, based on the program learning objectives defined by PUPR, will occur at four levels: the course level, the component or sequence level, the program level and the institutional level. Outcomes Assessment in all four levels has a common starting point: the teaching-learning process in the classroom.

The assessment at the course level will cover every single course in the program by addressing several learning objectives at each course and will be performed taking into consideration four factors. (See Figure III-1-A, Figure III-1-B and Table 1). The assessment will be conducted using the instruments provided in appendix M-P.
The first factor will be the design of the course; the second will be the professor offering the course; the third will be the classroom and environment where the course is taught, and the fourth will be the student taking the course.
LEARNING PU PR OUTCOMES ASSESSMENT AT THE COURSE LEVEL

FIGURE III-1-A

SIPOC DIAGRAM, Page 24 to 25

TEAM – Peter R Scholtes, Brian L. Joiner, Barbara J. Stribel, 1996
OUTCOMES ASSESSMENT AT COURSE LEVEL
Figure III-1-B
1. First day of class background knowledge probe or brainstorming about it.

2. Last minute paper of class to write down what they learned in that class.

3. Muddiest point in which students write down the subject or theme they found the most confusing in the class.

4. The attention quiz or short multiple choice tests on material discussed in the just completed class.

5. First and last day class two page composition regarding one particular subject to assess the dominion the student achieved about a skill, ability, attitude or knowledge through the course.

6. Two to three student problem solving groups where they work on problems in class before instructor goes over the problems.

7. Student-generated test questions either for a take-home or for a class period.

8. Presentation and discussion of every day ethical dilemmas.

Figure III-1-C. Some formative outcomes assessment techniques that may be used in every class meeting. (11, 12, 13, 14)
### Table 1

The Learning Outcomes Assessment System at Course Level

<table>
<thead>
<tr>
<th>Assessment Instrument</th>
<th>COURSE</th>
<th>PROFESOR</th>
<th>CLASSROOM</th>
<th>STUDENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Student Survey</td>
<td>Respective</td>
<td>Appendix M-P-B</td>
<td>Appendix M-P-C</td>
<td>Appendix M-P-D</td>
</tr>
<tr>
<td></td>
<td>Appendix A to I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Portfolio</td>
<td>Appendix K</td>
<td>Appendix K</td>
<td>----</td>
<td>Appendix K</td>
</tr>
<tr>
<td>Faculty Survey</td>
<td>Appendix M-P-B</td>
<td>Appendix M-P-N</td>
<td>Appendix M-P-C</td>
<td>Appendix K</td>
</tr>
<tr>
<td>Transcripts</td>
<td>Appendix M-P-B</td>
<td>Appendix M-P-B</td>
<td>----</td>
<td>Appendix M-P-B</td>
</tr>
</tbody>
</table>
1.1 DESIGN OF THE COURSE

As pointed out, the first factor to be assessed when performing the assessment at the course level will be the design of the course (3, 9, 14, 15, 16, 17). The following questions, among others, will be asked by the program faculty, the Program Head and by the Program Dean. A thoughtful answer shall be provided to each one of them.

- Is this course truly necessary at all?
- If the answer is yes, is it properly designed to cover the most relevant themes and subjects of the material?
- How are the “level of importance” and the “level of difficulty” of the subjects in consideration weighed?
- Is the material logically organized?
- What are the general objectives of the course?
- What are the specific objectives of the course?
- Which of the ABET outcomes (a to k) are met?
- Which ones of the 52 Learning Goals are considered essential or very important by the Program Faculty Assembly?

In the design of every program course, after selecting the themes and subjects that will be covered, two determinations are mandatory; the degree of importance and the degree of difficulty of each one of the themes and subjects. They shall be estimated.

To assign the degree of importance and the degree of difficulty to each theme and subject, the course decision matrix that follows with the given weighing factors will be elaborated and made part of the syllabus.

Legend:

<table>
<thead>
<tr>
<th>Degree of Importance</th>
<th>Degree of Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Not very important</td>
<td>1. Easy</td>
</tr>
<tr>
<td>2. Important</td>
<td>2. Difficult</td>
</tr>
<tr>
<td>3. Very important</td>
<td>3. Very Difficult</td>
</tr>
</tbody>
</table>
Example: Course Decision Matrix (6)

<table>
<thead>
<tr>
<th>Theme and Subject</th>
<th>Level of Importance</th>
<th>Level of difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject 1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Subject 2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Subject 3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Theme B</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject 1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Subject 2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Subject 3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>Theme C</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject 1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Subject 2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Subject 3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

The adequacy and reasonableness of the order of presentation and the time allotment for the different themes and subjects are important elements that should be spelled out in the syllabus of the course. (See Table 2)
A comprehensive syllabus of a course should be prepared or revised, as may the case be, according to the following scheme.

1. Title of Course:
2. Code:
3. Prerequisites:
4. Number of Credit-Hours
5. Number of contact hours per week:
6. Number of contact hours per term:
7. Description of Laboratory location and equipment
8. Duration of course
9. Justification of course
10. General Description of course
11. General objectives
12. Specific objectives
13. Evaluation Criteria
14. Course content (themes and subjects) specifying the order or sequence in which they will be covered detailing the degree of importance and the degree of difficulty of each theme and subject.
15. Special subjects
16. Demonstrations
17. Course outcomes to be achieved for example, (ABET 3 a to 3 k*) - specify
18. Bibliography
19. References

*Other programs accredited by NAAB, LAAB and IACBE should refer to the course outcomes specified by the corresponding accrediting agency.
1.2 THE PROFESSOR ASSIGNED

The second factor to be assessed at the course level is the person in charge of teaching the course— the professor. The professor (3, 14, 15, 18, 19, 20) must have the competency to cover all the material of the course. The competency of the professor must be confirmed through the assessment of a series of elements such as:

- Education: Has obtained a degree, in the discipline, higher than the degree level being taught?
- Professional experience: describe
- Teaching experience: describe
- Ability to communicate; clarity and impact of presentation
- Ability to generate enthusiasm for the subject and how much enthusiasm the professor shows
- Level of scholarship or erudition
- Active participation in professional societies: enumerate
- State registration as a professional
- Teaching style: describe
- Ability to reach gifted students, as well as those who may need more time and nurturing to learn a fact or concept
- Role modeling in terms of the degree of intellectual excitement generated in the student and the level of interpersonal rapport with them
- The teaching materials (textbooks, handouts, transparencies etc.) are used properly and stimulate learning
- The means of evaluating learning (evaluation criteria, weighing factors, test questions and difficulties the student experiences with the tests) are objective and appropriate.
The performance of the professor will be evaluated using the procedures described in the Manual of Personnel. Several assessment instruments are provided that may be used to fulfill this objective, such as the evaluation by the students appendix M-P-B, evaluation by the peers– appendix K, and the evaluation by the administration – appendix M-N.
1.3 CLASSROOM AND ENVIRONMENT

The third factor to be evaluated at the course level deals with the classroom and the teaching-learning environment (3, 4, 6, 16). Classrooms, laboratories, and associated equipment must be adequate to accomplish the program objectives and provide an atmosphere conducive to learning. Among other things, the following parameters will be evaluated.

- Appropriateness of the classroom assigned in terms of number of seats, condition of blackboards, chalks, markers, etc.
- Availability of visual aid equipment.
- Operational air conditioning unit and comfortable air temperature
- Good illumination intensity
- Cleanliness of the classroom
- Office space of the professor
- Availability of laboratory equipment for demonstrations in class
- Number of students per class
- Accessibility to internet
- Accessibility to computers either in the department or in the educational technology center
- Accessibility to the learning resources at the library
- Field trips to special projects
- Participation in special activities in the community
- Accessibility to research laboratories in-house or elsewhere
- Collaboration and sharing of materials and special equipment with other groups taking the same course

The Classroom and environment will be assessed using the instrument provided in appendix M-P-C.
The fourth factor to be evaluated at the course level is the student enrolled in the course (6, 9, 15, 16, 17, 19, 20). At the beginning of the course every enrolled student will be evaluated about his/her abilities, knowledge, interests, motivation, learning style, determination and commitment with the new course and his/her program of studies. Also they will be diagnosed about their ability to share leadership in a group; their sense of organization, belonging to a group, and sharing tasks; their ability to hold effective meetings; their sense of responsibility, autonomy, and initiative.

The handicapped student will be identified as well, at the beginning of the course and the actions needed, to remedy, the limitations, and provide him/her reasonable comfort shall be will be taken.

Instructions about how the course will be developed and how to prepare the portfolio will be given the first day of class. A calendar of the special projects, summative tests and oral presentations will be distributed also the first day of class.

A student advisory committee to help the professor may be organized the first day of class every trimester. This Committee may be composed by the honor students attending the class, officially registered in the course. (The honor students will be identified by the Registrar in the list of enrolled students provided to the professor) not later than the fifth day of classes. The main tasks of the committee will be to help leading the teams formed in the class to perform work in groups and to provide feedback to the professor about the effectiveness of his/her presentation of the material.
The Mentoring and Enrollment Process will be followed every trimester with every student registered. This way every student will receive all the support needed to succeed.

The assessment of the student learning will be performed using the statistical analysis of the official transcript by the mentor, the course and electronic portfolio and the student self-evaluation.
2. COMPONENT OR SEQUENCE LEVEL

The Assessment at the component level (6, 9, 16, 17) or at the particular topic or sequence such as engineering design, communication skills, teamwork, problem solving, mathematics, science, professionalism and ethics or lifelong learning etc., will take place by assigning learning objectives to the highest coded course of each component or sequence so that the educators can ensure that every course in a component contributes to the required program outcomes. (See Figure III-2-A, and III-2-B, III-2-C and Table 3).

Questions, as the following, will be asked and answered.

✓ Is this component necessary at all?
✓ Is the number of credit-hours or number of courses of this component or sequence too long? or too short?
✓ Is there any material in the component or sequence that has been repeated in different courses without contributing anything new?
✓ Is there any relevant material that was left out which should be in?
✓ What improvements to this component or sequence should be introduced?
✓ What would be the minimum requirements or passing indexes for each of the course’s learning objectives so that the student who fails to meet them should not get a passing grade in the said component?

The instrument to be used is provided in appendix M-P-E.
LEARNING OUTCOMES ASSESSMENT PROCESS AT SEQUENCE OR COMPONENT LEVEL
Figure III-2-A
Learning Outcomes Assessment at the Component or Sequence Level

Figure III-2-C
### Table 3
Component/Sequence Level

<table>
<thead>
<tr>
<th>Component Courses</th>
<th>Assessment Instrument</th>
<th>Passing Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course G</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course J</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Q</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course U</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Z</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

An institutional comprehensive test will be designed and administered by the Department Faculty, immediately after completing the highest coded course in the component or sequence. Both oral and written tests shall be used to confirm the achievement of several outcomes.

A student who fails to pass the tests will have an additional opportunity to take the exams. The goal is that over ninety percent of the students taking the tests should pass them.
3. **THE PROGRAM LEVEL** *(4, 6, 10, 17)*

To verify the achievement of program outcomes, educators will use at least three different instruments, such as the official transcript, national license tests, electronic portfolio, employer surveys, alumni surveys exit interviews with seniors and senior design jury. (See Figure III – 3 – A).

A complete analysis of the Transcript will be made to confirm that all graduation requirements including the passing grade of every component or sequence have been met by every one of the candidates.

A - Engineering students may take the first of a two part exam, called Fundamentals Examination required, to obtain the Professional Engineer License. The PUPR acceptable passing rate of the students taking the FE test, as informed by the National Council of Examiners for Engineering and Surveying (NCEES) Reports No. 5 and No. 6 shall be equal or higher than the National average.

The course portfolio and the longitudinal electronic portfolio will be evaluated by a Department Faculty Committee to assess the achievement of all the “3 a to 3 k” ABET outcomes.
B - The Architecture students must take…

C - The Land Surveying and mapping graduates must…

D - The Business administration students must take…

The efficacy of the program will be assessed through at least three different approaches, such as: a) evaluation of the program graduate transcripts, b) employer surveys, c) FE exam results, d) senior design jury surveys, and e) alumni surveys.
<table>
<thead>
<tr>
<th>Component or Sequence</th>
<th>Assessment Instrument</th>
<th>Passing Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I Component</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1- Preparatory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2- Mathematics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3- Physical Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4- Socio-Humanistic and Language Studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5- Engineering Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6- Major</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7- Computer Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8- Electives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9- Laboratories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10- Practicum</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>II Sequence</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1- Ethics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2- Communication skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3- Engineering Problems Solving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4- Statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5- Multidisciplinary Teamwork</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6- Engineering Design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7- Broad education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8- Lifelong learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9- Contemporary issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10- Architecture design</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
OUTCOMES ASSESSMENT AT PROGRAM LEVEL

Figure III-3-A

- Assessment of each one of the program components using the transcript and national tests such as FE exam
- Assessment to demonstrate that graduates have developed, as a minimum, the “3 a to 3 k” abilities identified by the stakeholders using triangulation
- Assessment to confirm the major design experience Project or Thesis using special instruments
- Teaching-Learning process at the Engineering course and Land Surveying classroom
- Assessment of each one of the special sequences or topics identified using the course and electronic portfolios
OUTCOMES ASSESSMENT AT PROGRAM LEVEL
Figure III-3-B
4. THE INSTITUTIONAL LEVEL

Polytechnic University of Puerto Rico has developed and implemented an assessment plan and process that evaluates, departing from the teaching-learning process at the classroom, the Institution’s overall effectiveness. The assessment of student learning has the student as the primary focus of inquiry. It is closely related to the assessment of institutional effectiveness, which at the same time is essential as a means to monitor and improve the environment provided for teaching and learning.

The assessment at the institutional level will be focused on the achievement of the mission and goals; implementation of planning, resource allocation, and institutional renewal; institutional resources; leadership and governance; administration; and integrity. The aim of the institutional level goals should be to develop students so that after graduation they may:

a. start assuming positions of leadership  
b. have acquired a vision as a global citizen  
c. be technologically competent individuals  
d. have developed the essential skills in oral and written communications  
e. are critical thinkers  
f. be skillful in scientific and quantitative reasoning

The assessment at the institutional level is the responsibility of the Vice-President for Academic Affairs. He will receive the close cooperation and assistance of the Academic Deans, Curriculum Assessment Coordination Committees of the Departments, and the Institutional Outcomes Assessment Committee. The assessment will be carried out questioning the efficacy or performance of each office assigned to undertake a task to help students achieve the academic objectives. The question the Director of every office should be asking and looking for a satisfactory answer is:
How the service this office provides can be improved on a continuous basis so that the students receiving the service can get higher quality service in order to increase the learning achievement? (See Figure III-4-A)

The assessment instruments are provided in appendix M.
FIVE LEVEL ASSESSMENT PROCESS

**Program Level**
Each Academic Program, in its totality, including all components.

**Institution Level**
Overall institution, including all campuses, schools, offices, deanships, departments, and programs.

**Component or Sequence Level**
Each one of the nine components of every program (undergraduate or graduate)

**Course Level**
Of every program (undergraduate or graduate)

**Figure III-4-A**
Administration

Related Educational Activities

Institution’s Mission, goals and objectives

Student Admissions

Planning, Recourse Allocation, and Institutional Renewal

Student support services

Faculty

Leadership and Governance

Integrity

Educational Offerings

Institutional Resources: human, financial, technical, physical facilities, others

TEACHING-LEARNING PROCESS AT THE CLASSROOM

ASSESSMENT AT THE INSTITUTION LEVEL

Figure III-4-B
5. PUPR SCHOOL OF ENGINEERING ASSESSMENT MODEL

(Each school may follow this model)

Survey of Performance Data Collection Activities and Responsibilities

Department: ____________________  Date: ____________________

Department Chair: ____________________

Measurement Methods

1- Fundamentals of Engineering Examination Results for the discipline studied
2- Surveys of Graduating Seniors (Capstone II Students)
3- Surveys of Alumni (1, 5 and 10 years after graduation)
4- Survey of Employers
5- Student Transcript
6- Student course and electronic portfolios
<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Assessment Instruments and Criteria</th>
<th>Responsibility</th>
<th>Scheduled for Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3-a) Engineering</td>
<td>Transcript</td>
<td>FE Exam Results</td>
<td>Employers agree performance is above benchmark school</td>
</tr>
<tr>
<td>graduates have an</td>
<td>At least 90% of courses containing</td>
<td>Above average pass rate</td>
<td>Department Chair</td>
</tr>
<tr>
<td>ability to apply</td>
<td>design are passed with A or B grades</td>
<td></td>
<td></td>
</tr>
<tr>
<td>knowledge of mathematics, science and engineering</td>
<td></td>
<td>At least 80% of employers agree performance is above benchmark school</td>
<td></td>
</tr>
<tr>
<td>(3-b) Engineering</td>
<td>Transcript</td>
<td>Student Portfolios</td>
<td>Employer Survey</td>
</tr>
<tr>
<td>graduates have an</td>
<td>At least 90% of laboratory courses</td>
<td>100% of longitudinal portfolios demonstrate this ability</td>
<td>At least 80% of employers agree performance is above benchmark school</td>
</tr>
<tr>
<td>ability to design and</td>
<td>are passed with A, B or C grades</td>
<td></td>
<td>Department Chair</td>
</tr>
<tr>
<td>conduct experiments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and, interpret data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcomes</td>
<td>Assessment Instruments and Criteria</td>
<td>Responsibility</td>
<td>Scheduled for Data Collection</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------------</td>
<td>----------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>(3-c) Engineering graduates have an ability to design a system, component, or process to meet described needs</td>
<td><strong>Transcript</strong>&lt;br&gt;At least 90% of courses containing design are passed with A, B or C grades</td>
<td><strong>Senior Design Jury Surveys</strong>&lt;br&gt;100% of longitudinal student portfolios will demonstrate integration of design through the curriculum and an understanding of professional and ethical issues</td>
<td>Faculty member in charge of capstone course</td>
</tr>
<tr>
<td>(3-d) Engineering graduates have an ability to function on multidisciplinary teams</td>
<td><strong>Alumni Surveys</strong>&lt;br&gt;In alumni survey 90% will “agree” that graduates have an ability to function on multidisciplinary teams</td>
<td><strong>Employer Surveys</strong>&lt;br&gt;At least 80% of the respondents will “agree” or “strongly agree” that graduates have this ability to function on multidisciplinary teams</td>
<td>Department Chair</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Assessment Instruments and Criteria</td>
<td>Responsibility</td>
<td>Scheduled for Data Collection</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>(3-e) Engineering graduates have an ability to identify, formulate and solve engineering problems</td>
<td><strong>Transcript</strong>&lt;br&gt;At least 90% of transcripts will confirm that the concentration courses were passed with A, B or C grades</td>
<td>Faculty member coordinating the capstone course</td>
<td>Fall, Winter and Spring terms</td>
</tr>
<tr>
<td></td>
<td><strong>Student Portfolios</strong>&lt;br&gt;100% of longitudinal student portfolios will demonstrate graduates have an ability to identify, formulate and solve engineering problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Employer Survey</strong>&lt;br&gt;At least 80% of respondents “agree” or “strongly agree” that graduates have an ability to identify, formulate and solve engineering problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3-f) Engineering graduates have an understanding of professional and ethical responsibility</td>
<td><strong>Alumni Surveys</strong>&lt;br&gt;At least 90% will “agree” that their BS program preparation is adequate in professionalism</td>
<td>Department Chair</td>
<td>Spring Term</td>
</tr>
<tr>
<td></td>
<td><strong>Student Portfolios</strong>&lt;br&gt;100% of longitudinal student portfolios will demonstrate integration of design through the curriculum and an understanding of professional and ethical issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Employer Surveys</strong>&lt;br&gt;At least 90% of the respondents “agree” or “strongly agree” that graduates have an understanding of professional and ethical responsibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcomes</td>
<td>Assessment Instruments and Criteria</td>
<td>Responsibility</td>
<td>Scheduled for Data Collection</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------------</td>
<td>----------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>(3-g) Engineering graduates have an ability to communicate effectively</td>
<td><strong>Transcript</strong>&lt;br&gt;At least 90% of courses requiring oral or written reports must be passed with A or B grades including socio-humanistic component and engineering</td>
<td>Department Chair</td>
<td>Spring Term</td>
</tr>
<tr>
<td><strong>Student Portfolios</strong>&lt;br&gt;100% of longitudinal student portfolios will demonstrate increased oral, written and graphical communication skills</td>
<td><strong>Employer Survey</strong>&lt;br&gt;At least 90% of respondents “agree” or “strongly agree” that graduates have an ability to communicate effectively</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3-h) Engineering graduates have the broad education necessary to understand the impact of engineering solutions in a global and societal context</td>
<td><strong>Alumni Surveys</strong>&lt;br&gt;At least 90% of respondents will “agree” or “strongly agree” that their BS program provided adequate preparation and understanding the impact of engineering solutions in a global and societal context</td>
<td>Department Chair</td>
<td>Spring Term</td>
</tr>
<tr>
<td><strong>Student Portfolios</strong>&lt;br&gt;100% of longitudinal student portfolios will demonstrate the diversity, breadth and depth of subjects studied</td>
<td><strong>Employer Surveys</strong>&lt;br&gt;At least 90% of the respondents “agree” or “strongly agree” that graduates have the broad education necessary to understand the impact of engineering solutions in a global and societal context</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcomes</td>
<td>Assessment Instruments and Criteria</td>
<td>Responsibility</td>
<td>Scheduled for Data Collection</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------</td>
<td>----------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>(3-i) Engineering graduates have a recognition of the need for, and an ability to engage in life-long learning</td>
<td><strong>Alumni Survey</strong>&lt;br&gt;At least 90% of respondents will “agree” or “strongly agree” that their BS program provided adequate stimulation to increase appreciation and motivation for lifelong learning</td>
<td>Faculty member coordinating the capstone course</td>
<td>Fall, Winter and Spring terms</td>
</tr>
<tr>
<td>(3-j) Engineering graduates will have a knowledge of contemporary issues</td>
<td><strong>Alumni Surveys</strong>&lt;br&gt;At least 90% of respondents will “agree” or “strongly agree” that they have a knowledge of contemporary issues</td>
<td>Faculty member coordinating the capstone course</td>
<td>Fall, Winter and Spring terms</td>
</tr>
</tbody>
</table>
Engineering graduates have an ability to use the techniques, skills and modern engineering tools necessary in engineering practice.

<table>
<thead>
<tr>
<th>(3-k)</th>
<th>Alumni Survey</th>
<th>Student Portfolio</th>
<th>Employer Survey</th>
<th>Responsibility</th>
<th>Schedule for Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At least 90% of respondents will “agree” or “strongly agree” that their BS program provided adequate preparation and data analysis in experimentation, multidisciplinary teamwork, computing and communication</td>
<td>100% of longitudinal student portfolios will demonstrate that graduates have an ability to use the techniques, skills and modern engineering tools necessary in engineering practice</td>
<td>At least 90% of respondents “agree” or “strongly agree” that graduates have an ability to use the techniques, skills and modern engineering tools necessary in engineering practice</td>
<td>Faculty member coordinating the capstone course</td>
<td>Spring terms</td>
</tr>
</tbody>
</table>
6. LIST OF OUTCOMES INDICATOR STANDARDS OR PERFORMANCE CRITERIA THAT MAY BE USED FOR COMPARISON AS ACCEPTABLE RATES

1. Fundamentals of Engineering Examination: The passing rate of currently enrolled students taking this exam should be above the Puerto Rico passing rate.

2. Initial Employment: Above 75 percent of graduating seniors are employed within six months of graduation, under expanding economic conditions.

3. Employer Survey: Above 90 percent of employers “agree” or “strongly agree” that PUPR graduates’ performance is equal or better than graduates from other schools. See Table II, page 42 for emphasis in direct vs. indirect assessment measures.

4. Alumni Survey: Over 90 percent of graduates “agree” or “strongly agree” that PUPR programs provide their basis for career success and advancement. See Table II, page 42 for emphasis in direct vs. indirect assessment measures.

5. Honor student academic works such as capstone, publications, and competitions will be assessed. Students with a GPA higher than 3.25 participate in the Honors Program. The success of these efforts will be quantified to assess how well graduates are prepared for an MS program. Success in student competition provides evidence of teamwork, etc.

6. Fundamentals of Land Surveying Examination: Over 50% of those who take the test the first time should pass it.

7. Professional Architecture Examination: Over 50% of those who take the test the first time should pass it.

8. Certified Public Account Examination: Over 50% of those who take it the first time should pass it.

9. Graduation rates and average time taken to graduate based on the fall cohort, by discipline, shall be no less than 12% in 5.5 years.
10. Students leaving in good standing with very positive prognosis, GPA > 2.69; positive prognosis, 2.00 < GPA < 2.69 or poor, GPA < 2.00) based on the fall cohort, by discipline, shall be < 5% of total cohort.

11. Early departures of students leaving in good standing with very positive prognosis (students leaving with a GPA of 2.7 or higher) based on the fall cohort, by discipline, shall be less than 5% at the end of the first year.

12. Early departures of students leaving in good standing with positive prognosis (students leaving with a GPA between 2.00 and 2.69) based on the fall cohort, by discipline, shall be less than 10% at the end of second year.

13. Early departures of students leaving not in good standing (students leaving with a GPA lower than 2.00 and the average time spent at the institution based on the fall cohort, by discipline, shall be less than 10% by the end of the second year.

14. Identification of gate-keeper courses, and bottle-neck courses for the determination of the Index of Course Efficiency (ICE of 1.0 is ideal on the fall cohort), by discipline, shall always be less than 2.0 and preferably less than 1.5.

15. Satisfactory outcomes (A, B, C) on first attempt of the course in percent (%) of total number of students enrolled in the course, by discipline, shall be higher than 75%.

16. Unsatisfactory outcomes (D, F, W, I) on first attempt of the course in percent (%) of the total number of students enrolled in the course, by discipline, shall be lower than 25%.

17. Number of times a course is repeated unsatisfactorily, by discipline, shall be less than 3.

18. Successful repetition of D, W, F, or I in percent (%) of unsatisfactory attempts of the course, by discipline, shall be greater than 75%.
19. Number of students unable to successfully repeat a course in percent (%) of unsatisfactory outcomes, by discipline, shall be lower than 25%.
20. Number of students unable to repeat a course and pass it with A, B, or C, in percent of total, shall be lower than 10%, by discipline.
21. Retention rates by quarters in percent, for each degree program, shall be no less than 75%
22. Percent of students admitted to number of applications received per term per discipline shall be over 75%.
23. Percent of women admitted to number women applying per term per disciplines shall be over 90%.
24. Percent of women admitted to total number of students admitted per term per discipline shall be over 15%.
25. Total number of undergraduate and graduate students (head count) enrolled in each term shall be over 5,800 students.
26. Total number of undergraduate as well as graduate students (head count) enrolled per program each academic year in August shall be at least equal to the preceding year.
27. Percent of undergraduate women enrolled per program each academic year shall increase by 1%.
28. Total number of undergraduate as well as graduate women (head count) enrolled per program in each academic year shall be ______.
29. Annual number of degrees awarded per program shall be ______.
30. Annual number of full time (head count) faculty per program ____.
31. Annual number of part time (head count) faculty per program___.
32. Annual number of full time equivalent (FTE) faculty per program ______.
33. Total number of undergraduate full time equivalent (FTE) students enrolled per term shall be __________.
34. Total number of graduate full time equivalent (FTE) students enrolled during the fall term per year, shall be ________.
35. Ratio of undergraduate as well as graduate full time equivalent (FTE) students to faculty (FTE) per program shall be ________.

36. Ratio of undergraduate part time to full time students (head count) in the 1st, 2nd, 3rd, 4th and 5th year, every year, as enrolled in the fall term should be ________.

37. Ratio of graduate part time to full time students (head count) per year as enrolled in the fall term should be ________.

38. Percent of money invested, per academic year, in the following concepts compared to the budget authorized for each program:
   a. laboratories (materials and equipment) is ________.
   b. fulltime faculty is ________.
   c. part time faculty is ________.
   d. buildings and ground is ________.
   e. administrative salaries and fringe benefits is ________.
   f. Utilities is ________.
   g. general expenses is ________.
   h. total compensation is ________.
   i. total operation expenses is ________.

39. Percent of money invested, per academic year, at the institutional level, for each one of the following concepts:
   a. total compensation is ________.
   b. total operation expenses ________.
   c. total budget ________.
   d. percent of money spent in faculty development ________.

40. Total cost per fulltime equivalent (FTE) student is ________.

41. Average number of credit hours, enrolled every term, per student (fulltime equivalent) is ________.
7. REFERENCES

1. Stepping Ahead: An Assessment Plan Development Guide; Gloria M. Rogers and Jean K. Sando; Rose-Hulman Institute of Technology; 1996

2. Reglamento para el Otorgamiento de Licencia a Instituciones de Educación Superior en Puerto Rico; agosto, 1997


6. 1998 Conditions and Procedures for Professional Degree Program in Architecture; The National Architectural Accrediting Board (NAAB)

7. Lewis, Ralph G; Smith Douglas H. Total Quality in Higher Education; St Lucie Press Delray Beach, Florida


10. Richard M. Fedler and Rebecca Brent, Designing and Teaching courses to satisfy the ABET Engineering Criteria; Journal of Engineering Education; January 2003


13. Elba Rodríguez; Guía para el “Assessment en la Sala de Clases. Universidad Interamericana de Puerto Rico, Recinto de Bayamón; septiembre de 2001


15. Pregent, Richard. Charting your Course: How to Prepare to Teach more Effectively; Magna Publication, Inc, 1994
16. Criteria for Accrediting Engineering Programs 2001-2002 accreditation cycles; Engineering Accreditation Commission; The Accreditation Board for Engineering and Technology (ABET)

17. Danilson, Charlotte and Abrutyn, Leslye; An Introduction to using Portfolios in the Class; ASCD-Association for Supervision and Curriculum Development, 1997

18. Cornesky Robert, Edited by Jennifer Lind; The Quality professor: Implementing TQM in the classroom; Magna Publication, Inc. 1993

19. Goleman, Daniel; Emotional Intelligence; Bantam Books; 1995

20. Goleman, Daniel; Working with Emotional Intelligence; Bantam Books; 1998