

**Follow-up Report to the  
Middle States Commission on Higher Education**

from

**UNIVERSITY OF PUERTO RICO  
Mayagüez, PR 00681**

Prepared by

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Chancellor**

**September 29, 2003**

**Subject of the Follow-up Report:**

***“The Commission requested a follow-up report by October 1, 2003, documenting (1) development and implementation of a comprehensive institutional strategic plan, and (2) development and implementation of a comprehensive outcomes assessment plan including student learning outcomes.”***

**Date the PRR Was Submitted:**

**June 2001**

### Background:

This brief report seeks to address the issues that were pointed out, and additionally requested, by William B. DeLauder, Chair, Middle States Commission on Higher Education, in his letter dated November 20, 2001 to the then Interim Chancellor, Prof. Pablo Rodríguez. By means of this letter the MSCHE accepted the Periodic Review Report submitted by the University of Puerto Rico, Mayaguez, reaffirmed accreditation, and also commended the institution for the quality of the report. *“The Commission requested a follow-up report by October 1, 2003, documenting (1) development and implementation of a comprehensive institutional strategic plan, and (2) development and implementation of a comprehensive outcomes assessment plan including student learning outcomes.”*

### Follow-up Activities:

Prof. Marta Colón de Toro, the then University of Puerto Rico, Mayagüez (UPRM) Institutional Coordinator for MSCHE 2005 accreditation provided the following chronology of events, which occurred after receiving the above MSCHE report:

- Chancellor Pablo Rodríguez agrees to make Strategic Plan and Outcomes Assessment a priority. Colleges and deans instructed to put self-study committees on hold (November 2001).
- Working schedule revised. Dr. George Santiago from MSCHE visits campus (December 2001 - January 2002).
- A total of 25 UPRM faculty and 5 staff participate in an assessment institute offered by Penn State’s NCTLA in San Juan (February 2002).
- Three workshops on outcomes assessment offered to coordinators in the College of Arts & Sciences. Proposal developed for restructuring the Office of Institutional Research and Planning. Chancellor Pablo Rodríguez approves it, and requests implementation. Assessment workshops given to the faculty of Mathematics and Nursing departments (March – April 2002).
- A two-day assessment workshop organized for UPRM faculty and staff with Penn State’s NCTLA speakers (May 2002).
- Prof. Marta Colón de Toro participates in the Annual AAHE Conference in Boston (June 2002).
- Prof. Eva Z. Quiñones appointed as the new UPRM Institutional Coordinator for MSCHE 2005 accreditation by the newly-named Chancellor, Dr. Jorge I. Vélez Arocho.

### Formation of the Present Team:

On January 24, 2003, Dr. Anand D. Sharma, Special Assistant to the Dean of Engineering, was appointed by the Chancellor, Dr. Jorge I. Vélez Arocho, as the

new Institutional Coordinator of the UPRM-MSCHE Team. This was done because Prof. Eva Z. Quiñones was in the process of being named as the dean of the College of Business Administration. The rationale lay in the fact that Dr. Anand D. Sharma had recently coordinated the ABET (Accreditation Board for Engineering and Technology) accreditation efforts for the six undergraduate engineering programs in accordance with the new outcomes-based Engineering Criteria 2000. These accreditation-related efforts had served as a driving force in the creation of the SEED (System for the Evaluation of Education) Office in the College of Engineering, and also similar such offices within each department. These offices played a significant role in the overall assessment efforts, in serving as units for continuous improvement, and in the preparation of the self-study reports for the ABET accreditation visit in November 2002. The chancellor intended to capitalize on this recent experience in the thrust towards MSCHE accreditation, and also in developing a similar campus-wide structure for providing continuous assessment and improvement as a long-term goal. This nascent structure is beginning to be better known as the Continuous Improvement Educational Initiative (CIEI).

Thus, on January 24, 2003, a new UPRM-MSCHE Steering Team was formed. Eleven (11) task forces were created to address the fourteen (14) Standards of Excellence. Some of the task forces have more than one coordinator who serve as co-coordinators, or deal with more than one standard. These coordinators are representative of all the four academic colleges on campus, and they, along with two advisors (Prof. Eva Z. Quiñones and Prof. Marta Colón de Toro), the Dean of Academic Affairs (Dr. Mildred Chaparro), and the Director of Institutional Research and Planning (Dr. Antonio González), make up the new UPRM-MSCHE Steering Team.

#### The Challenge Ahead:

The following tasks to be carried out were put before the newly formed team:

1. Reorganization of the task forces, the coordinators, and composition of the individual task forces with appropriate members, both number wise and with appropriate backgrounds, so that the collective experience would be more in tune with the standards that were going to be dealt with.
2. Development of charge questions for all standards, and the Self-Study Design for submission to MSCHE before the semester's end in preparation for the accreditation visit in 2005.
3. Design and development of questionnaires for a campus-wide survey to address the charge questions, and subsequently to help in the development of self-study reports of not only the individual task forces, but also the overall self-study report for the accreditation visit in 2005.
4. Development and implementation of a comprehensive Institutional Assessment Plan, including Student Learning Outcomes, and to submit it to MSCHE prior to October 1, 2003.

5. Development and implementation of a comprehensive Strategic Plan prior to October 1, 2003.

Although Tasks 1-3 have been fully accomplished, the main reasons behind this report are to provide the requested evidence on the completion and implementation of Tasks 4 and 5 as enumerated above. A separate institutional committee was formed for Task 5.

**Implementation of the present Strategic Plan of the University of Puerto Rico at Mayagüez (UPRM):**

The present UPRM Strategic Plan, which was approved in 1997 by the UPRM Administrative Board through Certification 96-97-603, has been implemented by the academic and administrative units in most of the strategic directions established for each of the nine areas:

*1. Make student as the central reason of being of university activities*

- Through the development of an assessment process, some academic departments have defined the profile of graduates by the establishment of specific program outcomes.
- Academic departments have established laboratories and centers in support of the learning process.
- Academic departments promote student participation in competitions at the national level. UPRM has excelled in student competitions such as the Solar Decathlon. In this competition, engineering students from our campus and architecture students from UPR Río Piedras, planned, designed and built a solar house in The Mall in Washington, D.C. and obtained the 7th position overall. In a regional competition, sponsored by the American Society of Civil Engineers, civil engineering students obtained the first place overall. Our chorus group obtained the first prize in an international competition at Verona, Italy; and in an international oratory competition, our political science students obtained the first prize.
- The university provides job opportunities to students through Cooperative Education Program, internships and by organizing job fairs.
- Academic units have been working in the development of assessment processes to measure the effectiveness of learning.
- The Office of the Dean of Students has supported student organizations and the activities that they sponsor.
- The university has sponsored numerous athletic and musical activities.
- The operational schedule of the medical services has been extended.
- The university obtained funds for the establishment of an area for drug and alcohol free entertainment during the nights and for the renovation of the game room.
- The Center for Faculty Enhancement regularly coordinates activities to strengthen teaching skills to promote education based on learning.

- The Office of Students' Ombudsman and the Office to Improve the Quality of Life were established in the institution.

## *2. Transform UPRM into a complete university of excellence*

- New programs have been developed to extend the academic offering in sciences and engineering: Ph.D. in Applied Chemistry, Ph.D. in Computing and Information Sciences (interdisciplinary program), Ph.D. in Chemical Engineering, M.S. in Industrial Engineering and M.S. in Computer Engineering. Doctoral degrees in Biology, Biotechnology and Mechanical Engineering will be offered in the near future. An M.S. degree in Nursing is available through a consortium with the Medical Sciences Campus of the UPR. Academic departments have been working in the development of new programs: Ph.D. in Electrical Engineering, B.S. in Computer Science and Engineering, Software Engineering, B.S. in Agricultural Engineering, P.D. in Tropical Agriculture, B.S. in Food Science and Technology, M.S. in Applied Statistics, B.S. in Computer Sciences and B.S. in Chemical Education.
- The Division of Extension was restructured and converted into the Division of Continuous Education and Professional Studies. The division has been offering and developing new courses to keep programs up to date according to the needs of the society, and technological advances. These are included in their programs with interdisciplinary courses. Projects at industry and laboratories have been included to complement the conferences and to provide an opportunity for acquiring practical experience while students are taking the course.

## *3. Promote entrepreneurship in students*

- The approval of a Certificate for Entrepreneurial Development has allowed students from different programs to acquire knowledge in the process and strategies for developing their own business.
- The Business Administration College developed courses to teach strategies for the establishment of a business.
- Academic departments coordinated conferences in which students had opportunities of learning about experiences of entrepreneurs.
- Student organizations coordinated activities in which their members had opportunities of collaboration with non-profit community organizations and charities, as well as other professional groups and organizations.

## *4. Internationalize the institution*

- Students are provided with opportunities to attend universities in the United States and other countries through the National Exchange Program and the International Exchange Program.

- The university has been host of international congresses such as the Latin-American Congress of Biotechnology, the International Congress of the Geometrical International Federation, the International Congress of Education and Mind, Entrepreneurial Congress, 6<sup>th</sup> International Symposium on Metal Ions in Biology and Medicine, poem V, First Congress of Fluids Mechanics, and of the American Seismological Society, among others.
- The university had organized educative activities in collaboration with federal agencies: Pan-American Seminar and Workshop on the Interphase between Automobile Traffic Network on the Dynamic Traffic Assignment and Bus Rapid Transit, Rehabilitating and Repairing the Buildings and Bridges of the Americas: Hemispheric Workshop for Future Directions, Workshop Metals, Health and Environment, among others.
- The university has formalized collaborative agreements with universities and agencies of the United States, Mexico, Spain, Panama, Dominican Republic, among other countries.
- The university has been receiving visiting professors from universities in the United States and other countries.
- The Office of Graduates Studies has been promoting the graduate programs in universities in the United States.
- The UPRM Chancellor has attended the annual meeting organized in Dominican Republic by the Dominican Alumni Association of the College of Agriculture and Mechanic Arts.
- Members of the faculty have been participating in internships in the United States to strengthen their knowledge and skills related with their areas of expertise.
- UPRM alumni have been hired by NASA, DOE, NIH, Microsoft, IBM, Ford, General Motors, Lucent Technologies, Hewlett Packard, among other recognized companies, federal agencies and departments.

##### *5. Strengthen research and development*

- The number of proposals for external funds has increased during these past years.
- The Research and Development Center has conducted activities to promote projects with external funds.
- The Research and Development Center developed a database of researchers.
- The university established new centers to strengthen the research and development. Some of the centers are Center for Collaborative Adaptive Sensing of the Atmosphere (CASA), Center for the Development of Chemical Sensors, Center of Biomedical Research, Puerto Rico Tsunami Warning and Mitigation Program, Center for Applied Social Research, Center for Internet Enhanced Teaching, among others.
- Researchers have presented their work in international and national conferences. Some of these are: Frontiers in Education, Caribbean

Quality Congress, ASEE Annual Conference, Electrotechnology International Symposium, IEEE International Conference, International Symposium on Remote Sensing, IEEE Antennas and Propagation International Symposium, Environmental Convention, and Annual North American Meetings of the Regional Science Association International, among others.

- The research results have been published in peer reviewed publications such as ITHET Proceedings, Caribbean Journal of Science, Inorganic Reaction Mechanisms, Journal of Chemical Education, Molecular Physics, IIE Transactions, Journal of Materials Education, Journal of Mechanical Design, Journal of Applied Mathematics and Computation, and Journal of Electric Power Components and Systems, among others.
- Some patents have been obtained as a result of research: Automation and Control of Solar Air Conditioning Systems, Compact Powered Air Conditioning Systems, Hybridization of Target DNA with Immobilized Nucleic Acids Analogs, Method for increasing the Hybridization Rate of Nucleic Acids, Reversible Immobilization of Ligaments into Metal Surfaces, Phosphors with Long-Persistence Green, among others.
- The university has obtained funds to improve research facilities.
- The College of Agricultural Sciences has conducted research to improve the quality of meat, poultry and vegetables and to provide them to local farmers.
- Members of the faculty have published books and edited journals. Some books and magazines are Revista Internacional de Desastres Naturales, Accidentes e Infraestructura Civil, Paradoja de la Historia: Descubrimiento de Puerto Rico, Principles and Modern Applications of Mass Transfer Operations, El Supervisor Efectivo en Puerto Rico, Los lagartos y culebras de Puerto Rico y Animales del Zoológico, Fishers at Work, Workers at Sea, Economía de Puerto Rico: Evolución y Perspectivas, Manual de Evaluación y Medición Beisbol Infantil, El Negro en la poesía cubana, Cúdice: foro de expresión para los estudiantes graduados y nuevos escritores, Principios Prácticos de Química General, Parte I y Parte II, La Redacción en el Nuevo Milenio, Tropical Forage: Development and Use, Aprendizaje Activo en la Sala de Clases Universitaria: Actividades para Ciencias, Matemáticas y Educación, La Administración de la Oficina Legal, capítulo del libro An Efficient Parallel Algorithm for Solving Unsteady Euler Equations, Parallel Computational Fluid Dynamics: Practice and Theory, Temas en Ciencias Sociales, y Fundamentos de Lógica Simbólica, among others.
- In 2002 UPRM became a member of Gelato Federation, an international organization that groups recognized universities and research centers at the global level.

## *6. Promote complete automation in UPRM*

- The UPRM Web Page has been transformed into an agile and efficient communication and dissemination media. Most of the academic and administrative units have developed their pages and are being maintained.
- The university has strengthened the infrastructure for distance learning. Some courses have been offered using this approach.
- The Virtual Class Room was established. This initiative allows distance course offering to our students and other interested parties. It allows professors from other universities to teach classes on our campus without being physically here. The virtual classroom has also been used for research activities.
- The General Library established the Center for Electronic Resources and has developed databases for on-line access to some of the resources.
- The university has implemented wireless communication technology in most of its facilities.
- Academic departments have made computers available for students' use.
- Professors have been incorporating the use of technology in the classroom.
- The UPRM has formalized agreements with technological companies to extend the use of specialized programs to the academic community.

## *7. Attain a university operationally agile, efficient and auditable*

- The registration process has been automated in most of its stages.
- Some administrative processes were evaluated to identify areas for improvement as part of the philosophy of total quality.
- The function of institutional research has been implemented.
- Academic units have been developing their respective outcome assessment plans.
- Administrative and support personnel have participated in seminars and workshops for professional improvement. Workshops for academic management have been organized.
- Academic and administrative units have acquired new computers and equipment to improve our productivity.
- The Center for Professional Enhancement was established to improve the teaching skills of our faculty and graduate instructors.
- Some units have implemented reward systems as incentive for personnel.
- The university has been organizing cultural, social and sports activities for academic community with the objective of contribute to cultural enrichment. Some of these activities are concerts, theatrical pieces, sports competitions, agricultural fair, and Christmas activities, among others.

## 8. Further a close collaboration and ample service to the community

- The intramural program was established with the objective of providing consulting and professional services to the government and the private sector. Faculty has provided professional services to government agencies and to the local industry.
- The Extension Division was transformed into the Division of Professional Studies and Continuous Education. It extended its course offerings and it is promoting the establishment of agreements with the private and public sectors to offer specialized courses to professional groups.
- The Agricultural Extension Service (AES) has been providing support and education to the community through their programs: *Agriculture, Marketing and Natural Resources, Family and Consumer Sciences, Youth 4-H and Community Resources Development*. AES has provided through these programs courses and training to facilitate the development of small businesses and to prepare people to obtain jobs. It also has been developing initiatives that contribute to youth development and education.
- The Agricultural Experiment Station has been providing high quality seeds and cattle to local farmers to contribute to the improvement of their production.
- As result of the research activity, the Agricultural Experiment Station has published bulletins that are useful to farmers. Some examples are: Conjunto tecnológico para la producción de pepinillo de ensalada, Papaya Tests, Conjunto tecnológico para la producción de melon cantaloupe y honeydew, La producción de recaó o culantro (*Eryngium foetidum* L.) en Puerto Rico, Estimación de la edad de los vacunos por sus incisivos, Relación de la carga animal y el uso de alimento concentrado con el porcentaje de grasa láctea y la producción en los hatos lecheros de Puerto Rico.
- Faculty has offered workshops to community groups and schools. Some of the workshops have dealt with the use of computers and career opportunities.
- The student groups have been organizing activities to further the conservation of the environment and the support of charitable organizations.
- Some academic departments have offered graduate courses during the evening to allow professionals to obtain their degrees without affecting their work schedule.
- The university has been active in the development of the Techno-economic Corridor.
- The Pre-Engineering Program has informed potential students about careers in engineering and the opportunities available for professional development.
- The establishment of a Pre-school Development Center has allowed children of university employees to be cared for and helped in their educational and cultural development.

- During the agricultural fair known as, *Cinco Días con Nuestra Tierra (Five Days with our Land)*, the university received about 80,000 visitors from all over Puerto Rico.

#### *9. Establish a master plan of infrastructure and installations*

- The construction of Chemistry building was completed.
- The Monzón building was converted into administrative offices, central computer operations and the Mathematics Department.
- The Board of Trustees approved funds to convert Celis Building for administrative use.
- The construction of new buildings for the Biology Department and the Business Administration College are in progress.
- The university has implemented measures for the appropriate disposal of solid waste and the improvement of environmental conditions. Some of these programs are: establishment of programs for management and disposal of hazardous waste, management and disposal of equipment with electronic component hazardous for the environment, management and disposal for universal waste, and the radiological protection program.
- The university implemented measures to promote safety, occupational health and environmental quality. Some measures are: continuous training in chemical substance management, fire prevention, use and management of extinguishers, risk communication, safety in laboratories, among others.
- Two historical buildings are under renovation: the Office of the Dean of Students, and the Institute of Tropical Agriculture. The Institute of Tropical Agriculture will house an art museum and the Academic Senate.
- The design of a new building for the Electrical and Computer Engineering Department is in progress.
- The facilities of the Antonio Lucchetti Building (Mechanical Engineering Department) were improved in 1999 and are now under a second renovation to fulfill the ABET requirements.
- In agreement with the Municipality of Mayagüez and with the Puerto Rico Zoo, the Campus has provided additional parking areas for students and employees. It also has extended public transportation service to these areas.

#### **Development of the New Strategic Plan of the University of Puerto Rico at Mayagüez (UPRM):**

UPRM Chancellor, Dr. Jorge I. Vélez-Arocho, appointed Dr. Omell Pagán-Parés as the coordinator of strategic planning in March 2003. His specific assignment was to:

- Produce a new institutional strategic plan.

- Align and standardize the strategic plans of the seven deans (Academic Affairs, Administration, Students, and of the four colleges of Agricultural Sciences, Arts and Sciences, Engineering, and Business Administration). Aligned with these would be the strategic plans of the academic departments and administrative units.
- Instill in the faculty, the students and the administration a culture of excellence and leadership at all levels of our university.

*The procedure developed to produce the new strategic plan, based on the basic concepts promulgated in the UPR System's Strategic Plan, the chancellor's and deans' academic and administrative plans, was as follows:*

1. Read the existing strategic plans (UPR, UPRM and President's Academic – Administrative Plan) and prepare a preliminary scheme. *(April 2003)*
2. Meet with the chancellor to define work plan and discuss preliminary scheme. *(April 2003)*
3. Develop standard to facilitate updating and aligning the deans' strategic plans. *(April 2003)*
4. Provide support to deans and departments to update their respective strategic plans. *(April 2003)*
5. Revise the strategic plans of the deans and departments. *(May – July 2003)*
6. Revise and edit the UPRM Strategic Plan. *(August 2003)*
7. Submit the plan for the final approval of the Academic Senate and the Board of Trustees. *(September 2003)*
8. Continually update and revise.

*The institution's mission, vision and values were defined considering the objectives and goals of the campus. The eight critical areas that were identified for the development of the UPRM strategic plan are as follows:*

- Leadership
- Students and Alumni
- Academic Affairs
- Research, Creative Productivity and Graduate Studies
- Community Service and Social Outreach
- Human Resources
- Effective and Efficient Administration
- Infrastructure

These eight critical areas comprise the academic and administrative functions performed in our university. Respective offices were designated for the development of each of the critical areas. For each critical area, a group of key strategies would need to be developed in order to accomplish the strategic goals.

The seven deans, and the offices ascribed to the chancellor's office, were to update their respective strategic plans; for which, various team groups were formed. The strategic planning coordinator met with each team group to coordinate and facilitate the development of the strategic plan at the corresponding office.

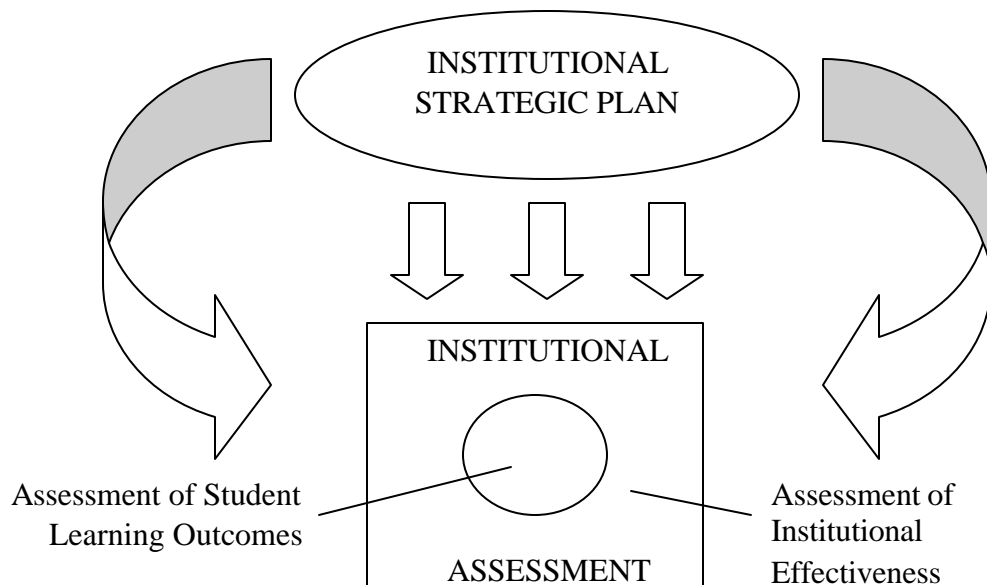
Once the strategic plans at department levels were completed, they were submitted to their dean for the alignment and integration. The deans integrated the strategic plans of their units to prepare the strategic plan at the college level. These strategic plans were then submitted to the strategic planning coordinator for integration with the UPRM Strategic Plan.

The strategic planning coordinator, in collaboration with the Office of Institutional Research and Planning, integrated the strategic plans submitted by each of the seven deans to prepare a draft of the UPRM Strategic Plan. This plan was then submitted to the Chancellor's Office for evaluation by the UPRM Administrative Board, and its eventual approval.

The UPRM Administrative Board met on September 22, 2003. The Board reviewed the draft of the strategic plan thoroughly and approved it as a proposal (Certification Number: 03-04-188) with a number of recommended changes. After the changes are incorporated, which is expected to happen in the next two weeks, the strategic plan proposal will officially become a discussion document at all levels of the university. The proposed strategic plan will then be submitted to the Academic Senate and to all colleges for consideration by the faculty. We plan to have an official strategic plan by the end of this year. The final step will be to obtain an endorsement from the UPR Board of Trustees. The approved proposal of the UPRM Strategic Plan is appended.

### **Development and Implementation of a Comprehensive Outcomes Assessment Plan including Student Learning Outcomes:**

This task was undertaken as a parallel activity by the UPRM-MSCHE Steering Team, in addition to the normal course of activities leading towards the accreditation visit in early 2005. The task was divided into two components, namely (a) the development of an Overall Institutional Assessment Plan, and (b) the development of an Institutional Plan for Student Learning Outcomes. The Team saw merit in handling it this way because the coordinator of task force dealing with Standard 7 on *Institutional Context* (Dr. Jayanta Banerjee) would be able to provide the leadership in the development of an Overall Institutional Assessment Plan; whereas, the coordinator of task force dealing with Standard 14 on *Educational Effectiveness* (Prof. Hiram Gonzalez) would be able to provide the leadership in the development of an Institutional Plan for Student Learning Outcomes. A clear vision as to how the above two plans came together along with the overall strategic plan was fully understood by the Team as shown below:



While the assessment of student learning outcomes is a subset of the overall institutional assessment, it is very much at the core of this plan. The entire UPRM-MSCHE Steering Team discussed the drafts of both plans extensively in a series of meetings, and later approved them before they were presented to the UPRM University Board for perusal and final approval. Care was exercised in the development of these plans to assure compliance with the existing Institutional Strategic Plan, which was approved by the UPRM Administrative Board on June 30, 1997 (Certification 96-97-603). The availability of Dr. Sandra Dika from the College of Engineering, given her academic background in *educational research*, was of tremendous asset in the development of the Overall Institutional Assessment Plan; whereas, the recent ABET experience in the development of student learning outcomes, and in the development of assessment tools was immensely useful in the development of an Institutional Assessment Plan for Student Learning Outcomes. As part of this plan, the UPRM-MSCHE Steering Team even developed a profile of a UPRM graduate, or the student learning outcomes for a UPRM graduating student. This was derived directly from the UPRM Mission statement, which is part of the existing strategic plan. The UPRM Administrative Board approved both assessment plans on August 28, 2003 (Certification Numbers: 03-04-179 and 03-04-180 respectively). The Institutional Assessment Plan for Student Learning Outcomes was further referred to the Academic Affairs Committee of the UPRM Academic Senate for a final look and endorsement. The approval of these two plans *at the institutional level* for the first time marks a significant milestone, and clears a way for its implementation, even though, such outcomes-based assessment plans have been fully implemented in the departments under the College of Engineering

owing to the the recent experience with ABET's Engineering Criteria 2000. In fact, it could be said that the implementation at the institutional level of these plans has already occurred because the 38 custom-designed campus-wide survey questionnaires, which are in the process of being administered, will serve as instruments of institutional assessment. But the assessment does not stop here, as it is intended to be an on-going activity under the aegis of the Office of Continuous Improvement Educational Initiative (CIEI). Both of these approved plans are appended.