

Periodic Review Report 2000

for the

Middle States Association of Colleges and Schools

University of Puerto Rico - Mayagüez

June 2001

1. Executive Summary

1.1 FROM THE DESK OF THE CHANCELLOR: UPRM 1995-2000

The University of Puerto Rico-Mayagüez (UPRM) has developed the Periodic Review Report (PRR) to be submitted to the Middle States Association (MSA) of Colleges and Schools' Commission on Higher Education. The PRR covers the institutional developments and the academic, research, administrative, and fiscal initiatives that have taken place at the UPRM, from the 1994-95 to the 1999-2000 academic years. Our report shows that the UPRM is an academically strong, vibrant, and growing institution of higher education in Puerto Rico. Many of our academic programs and research initiatives are recognized internationally, but in particular in the Caribbean and Latin America. The UPRM is a Land Grant, Sea Grant, and Space Grant institution that has three primary functions: teaching, research, and service to the local, national, and international community.

The UPRM is continuously working to develop initiatives to have students become the central figures or the "reason for being" (*razón de ser*); to internationalize our institution; to strengthen, encourage, and facilitate research initiatives among our faculty and researchers; and to develop state-of-the-art technology in all our administrative, teaching, and research facilities. We will continue to generate the necessary funds to provide adequate infrastructure for our students, faculty, and administrative personnel. We also want to strengthen our communication with and services to the local and national community. In essence, the UPRM is striving to become an international institution characterized by excellence in its academic, research, and administrative initiatives.

The PRR shows that, despite a variety of obstacles and challenges that our institution has recently confronted, we have made significant progress in the aforementioned areas since 1995. Although many challenges lie ahead and much work remains to be done, we are very proud of our accomplishments. All units have taken the need to develop strategic plans in order to chart their growth and development very seriously, taking into account their fiscal situations. Our colleges have developed their strategic plans with widespread participation of students, faculty, and administrative personnel. Consequently, we have a more dynamic, engaged, and participatory academic community that shows great concern for the growth and development of our institution.

The UPRM, and the whole UPR system, experienced an unprecedented growth of its student body from 1994 to 1998. Our student growth reached its peak in the 1998-99 academic year, and we are now experiencing a slight reduction in the size of our student body. Although the growth of the student population has been quite rapid, the growth in our fiscal and human resources and infrastructure have not experienced the same growth. We are working to maintain the total student body enrolled at the UPRM at its current level.

Currently, the UPRM offers three Ph.D., 27 Master's, and 55 Baccalaureate degree programs. New graduate and undergraduate degree programs have been developed in the last five years, and a significant number of programs are in progress or have been submitted to the different administrative structures (i.e., Academic Senate, Board of Regents, or Council on Higher Education). In 1999, we started offering a Masters' Degree Program in Nursing, in conjunction with the Medical Sciences Campus of the University of Puerto Rico (UPR); the UPR Board of Trustees recently approved a new Ph.D. Program in Information and Computational Sciences in Engineering; a Ph.D. Program in Chemical Engineering was created and approved in 1999 and we already have students pursuing doctoral degrees in this area.

The UPRM has placed a strong emphasis on research. The number of faculty engaged in research, the number of research initiatives, and the amount of external funds generated prove our recent success. UPRM Researchers have received external funds from a diverse set of local, state, and federal agencies and organizations. There is no doubt, however, that we need to continue to work to provide the necessary infrastructure, services, and incentives to our faculty in order to stimulate the continued growth and development of research initiatives at our institution.

In terms of technology, we have worked hard to provide state-of-the-art facilities to students and faculty at the UPRM. Our fiber optic communications infrastructure was renovated in 1997 to connect 42 buildings on the campus, therefore, increasing our access to Internet. These recent developments have put us in a leading position regarding communication infrastructure in Puerto Rico. This has also allowed us to generate and develop new distance learning initiatives. New computer laboratories and technology-based classrooms have emerged allowing us to incorporate new pedagogical techniques into the classroom. A variety of initiatives are underway to allow

students access to our computer technology, to purchase laptop computers at reduced costs, and to encourage the use of computer technology and distance learning at the UPRM.

We have continued to develop and renovate our infrastructure during the past five years. A new Chemistry building was inaugurated in 1996; an expansion of the Chemical Engineering building was completed in 1996; the construction of the buildings for the Department of Biology and the College of Business Administration are currently underway; the construction of the building for the Pre-School Development Center was completed in 2000; and there are many construction projects that are currently being planned. We continue to face serious limitations in terms of office space for faculty, available classrooms, and parking facilities. There are buildings that need to be renovated and many others that require continuous follow-up on maintenance activities.

We are pleased to report that a University reform is currently underway. This initiative, which is being led by the Commission for Education, Science, and Culture from the Legislature of the Commonwealth of Puerto Rico, seeks to reform the UPR Law in order to give more decision-making power and generate greater autonomy among the UPR campuses, and to reduce political intervention in the appointment of administrators, among others. This reform initiative has had the widespread participation of faculty, students, and staff at the UPR. We are particularly proud to indicate that UPRM faculty and students have played a leading role in this much-needed initiative.

One of the critical issues that the UPRM has confronted has been the frequent turnovers at the administrative level. In 1995, the MSA informed us of their concern regarding the constant administrative changes at our institution. Unfortunately, this is a problem that has been exacerbated in recent years. This issue has been a major concern at all levels, including the Academic Senate, the UPRM's Administrative Board, the University Board, and the Board of Trustees. Administrators, faculty, students, and staff have continuously expressed their concerns and their desire to have a more stable administrative body. We are convinced that with the new reform of the University Law, which is currently taking place, that this problem will be alleviated in the near future.

There are several other important areas that we are also currently working on. An Institutional Committee for the Evaluation and Development of Faculty was reinstated in 1999 to establish an efficient and uniform evaluation process for faculty. In 1999, the federal Department of Education approved a proposal submitted by the UPRM, under Title Five, in which one of the

primary activities proposed was to develop an institutional research office for the enhancement of academic and administrative decision-making and strategic planning capabilities. This office will be generating the necessary data to allow us to have continuous and up-to-date information on enrollment, graduation, retention, and research initiatives.

In summary, there are many areas with which the UPRM needs to work in order to continue to improve our academic offerings, to reduce the time-to-degree, and to increase our retention rates. We need to continue to work with the Central Administration of the UPR and with the Board of Trustees in order to improve the fiscal situation of the UPRM, which will then allow us to continue to improve our infrastructure and the services that we provide to our students and the external community. We need to provide additional incentives (such as release time and matching funds) to stimulate new faculty to participate in research. We need to continue to work with departments to improve the services that they provide to our students and to develop strategies to alleviate the problems students confront with bottleneck courses. We need to generate and develop more effective mechanisms to provide continuous self-study, self-assessment, and strategic planning initiatives. Indeed, there is much work to be done. Nevertheless, this PRR shows that much has been accomplished, that we have made significant progress since 1995, that we are continuously working to accomplish and fulfill our goals, that we have engaged the academic community in institutional and strategic planning and other matters that are important for the growth and development of our institution, and that we are an institution that is characterized by its academic and research excellence in Puerto Rico and abroad.

Prof. Pablo Rodríguez, Acting Chancellor

1.2 PRR 2000 STRUCTURE

The University of Puerto Rico-Mayagüez (UPRM) has generated the Periodic Review Report (PRR) to be submitted to the Middle States Association (MSA) of Colleges and Schools'

Commission on Higher Education. This report covers the institutional development and the academic, research, and administrative initiatives that have taken place at the UPRM, from the 1994-95 to the 1999-2000 academic years.

The UPRM's PRR has been developed following the general guidelines included in the Handbook for the Periodic Review Reports (1998, Seventh Edition) published by the MSA. This PRR consists of five chapters, including the Executive Summary (Chapter 1), Introduction (Chapter 2), Institutional Response to the 1995 MSA Recommendations (Chapter 3), Institutional Self-Study and Planning (Chapter 4), and Fiscal Analysis (Chapter 5).

The introductory chapter provides a general background and historical information on the procedure and steps that were followed in the organization and development of the PRR. This chapter also includes an institutional overview, focusing on issues such as governance and administration, the UPRM's mission and objectives, the academic programs offered at the UPRM, a general profile of the faculty, research and development, admissions and student services, the campus library, and physical plant and equipment. We should note that while we provide a general overview on these topics in this section, we also include information on significant developments that have occurred in these areas from 1995 to 2000. In the institutional effectiveness section of this chapter, we take a close look at graduation rates, retention, time-to-graduate, and provide graduation projections for the UPRM. In this section, we also provide a general profile of UPRM alumni, as a result of a survey that we conducted in the 1999-2000 academic year.

Chapter 3 is the primary section that focuses on the institutional responses to the 1995 MSA recommendations. This section is divided into the following sub-sections: governance and administration, students and student life, and outreach. Further, we include the responses of the four

academic colleges (e.g., Agricultural Sciences, Engineering, Arts and Sciences, and Business Administration) to the recommendations made by the MSA in 1995.

In Chapter 4, we provide a general description on the UPRM's initiatives and progress in the areas of self-study and planning. In this chapter, we focus on enrollments, institutional research, and strategic planning. Finally, Chapter 5 includes a fiscal analysis of the UPRM focusing on our fiscal operations since 1995. We also include fiscal projections for the UPRM up to 2005.

2. Introduction

2.1 APPROACH

2.1.1 HISTORY AND DEVELOPMENT OF THE UPRM-PRR DOCUMENT

The development of the Periodic Review Report (PRR) of the University of Puerto Rico-Mayagüez (UPRM) for the Middle States Association (MSA) of Colleges and Schools should have been a less demanding and more efficient task, but frequent administrative changes have seriously affected the process and caused it to become a major challenge. A dedicated group of faculty, administrators, and administrative personnel have worked vigorously, in a relative short period of time, to organize and establish the necessary tasks, collect the essential data and documentation, review the documents from the previous MSA evaluation and those necessary for the PRR, analyze and interpret all the necessary data, and, eventually, write, edit, and evaluate the PRR. Thus, this PRR is the result of an extraordinary commitment of many members of the academic community at the UPRM.

Between March 1999 and April 2001, our institution had five different teams with their corresponding plans to prepare the PRR. Appendix A includes the different teams that have formed part of the PRR effort at the UPRM. In March 1999, a Steering Committee began to study and evaluate the required tasks for the preparation of the PRR. A new Steering Committee and Coordinator began to work on the MSA/PRR in August 1999. This group developed a working agenda, which included objectives, tasks to be accomplished, and time frames. Two main committees (the Executive Committee and the Steering Committee) and four Task Forces (i.e., Responses to MSA 95, Outcomes Assessment, Enrollment and Projections, and Strategic Planning) were established to work on a diverse set of tasks required for the PRR. We should note that wide spread participation of the university community was essentially guaranteed given that each department had a Strategic Planning Committee actively involved in the PRR efforts. Also, each college and administrative office had a Strategic Planning Committee, which included representation from each of the departments within that unit. The members of the four MSA/PRR Task Forces

were comprised of representatives from the Strategic Planning Committees of the colleges and administrative offices. Furthermore, there were student representatives in each of the Task Forces and Planning Committees.

Each Task Force was assigned specific tasks and time frames to accomplish its work. In December 1999, the work of these committees came to an end in the midst of administrative changes at the UPRM. In February 2000, a new work plan was established to generate the PRR. Although this new plan was primarily based on the work previously accomplished by the Task Forces and Planning Committees, the elaboration of the PRR was assigned to a Steering Committee comprised of the seven Deans, the Directors for the Planning and Budget Offices, and the Director of the Campus Computer Center (See Appendix A).

In March 2000, Dr. Norman I. Maldonado, the President of the University of Puerto Rico (UPR) system, requested from the MSA a one-year extension for the UPRM to submit its PRR which was due in June 2000 (see Appendix B). In August 2000, as a consequence of additional administrative changes, a new group was assigned to complete the PRR. This team included the new Acting Dean of Academic Affairs, the Associate Dean of Academic Affairs, the Director of the Strategic Planning and Institutional Research Office (previously called the Planning Office), and the UPRM Statistics Officer.

Between August 2000 and March 2001, further significant difficulties and additional administrative changes took place at almost all levels of institutional administration. Following this critical period for the UPRM, on March 2001, yet another Steering Committee was formed to develop and complete the PRR. The Steering Committee included a Coordinator and a Co-Coordinator, the Associate Deans (representing all four faculties), the Director of the Budget Office, the Director of the Campus Computer Center, a student representative, and the Executive Assistant to the Chancellor. Further, a group of readers—comprised of members of the Academic Senate, previous administrations, the Association of University Professors at the UPRM, and employee labor unions—was established to disseminate the information included in the PRR and to receive feedback

from the general university community (see page ii). This team, with the support and encouragement of the new UPRM administration, was responsible for elaborating and developing the PRR.

2.2 INSTITUTIONAL OVERVIEW

2.2.1 BACKGROUND

The University of Puerto Rico (UPR) was created by an act of law of the Legislative Assembly on March 12, 1903. It emerged as an outgrowth of the Normal School, which had been established three years earlier to train teachers for the Puerto Rican school system. In 1908, the benefits of the second Morill-Nelson Act were applied to the island, thus fostering the rapid growth of the university. Eloquent evidence of that growth was the establishment of the College of Liberal Arts at Río Piedras in 1910 and of the College of Agriculture at Mayagüez in 1911. It was in the College of Agriculture that the Mayagüez campus of the University of Puerto Rico (UPRM) had its origin. In 1912, the school received the name that it bore for fifty years: the College of Agriculture and Mechanic Arts.

The strengthening and diversification of the academic programs at Mayagüez was recognized years later when in 1942, as a result of university reform, the campus was organized with a considerable degree of autonomy into colleges of agriculture and engineering, and a science division, under the direction of a vice chancellor. The expansion of the UPR system as a coeducational, bilingual, and nonsectarian institution continued through the 1950s when many programs flourished in the university. Both the Nuclear Center and the College of Arts and Sciences were established at Mayagüez in the 1950s.

The organization and mission for the entire University of Puerto Rico system is based on the University Law approved on January 20, 1966, and amended on June 16, 1993. As specified by this law, the mission of the UPR system is the following:

Given its function of serving the people of Puerto Rico, the primary mission of the University of Puerto Rico is to increase knowledge through the arts and sciences, and to contribute to the development and enjoyment of the ethical and aesthetic values of society. To accomplish this mission, the University works towards cultivating a love of

knowledge; encouraging the search for and constant discussion of truth; preserving, enriching, and spreading the cultural values of Puerto Rico; promoting students complete development as human beings in carrying out their responsibilities as servants of their community and society; maximally developing the intellectual and spiritual wealth latent in the people; and contributing and participating, within the limits of the academic community, in the study and search for solutions to the problems of Puerto Rico.

The basic mission of the UPR system has not been altered since 1966.

2.2.2 GOVERNANCE AND ADMINISTRATION

2.2.2.1 The Board of Trustees

The UPR is a well-established, mature institution with over 70,000 students and eleven autonomous campuses. The Board of Trustees, its governing body, consists of ten private citizens appointed by the Governor with the advice and consent of the Senate of Puerto Rico. These members represent the public interest in higher education. In addition, two faculty members and a student representative, elected from among their peers on the University Board, also form part of the Board of Trustees. The President of the Board of Trustees is selected from the members of the Board. The Board of Trustees is responsible for examining and reviewing the budgetary and institutional development plans of the UPR; authorizing the creation of new campuses, centers, and other institutional units; appointing the President of the UPR system and the Chancellors and the Directors of autonomous units of the system; and defining the rights and duties of the various constituents of the university community, among others.

2.2.2.2 The President and the Chancellors

The President of the UPR is the Chief Executive Officer (CEO) of the university system. The President is an *ex-officio* member of the Board of Trustees, of all the faculties, academic senates, and administrative boards of the university system. The Chancellor is the CEO of a particular unit. He or she presides over the Administrative Board, the Academic Senate, and the faculty meetings; appoints the Deans (with the consent of the Board of Trustees and the President of the UPR), Department Directors and university personnel; and prepares, for submission to the President, the annual report and budget petition of the campus, among other functions.

2.2.2.3 The Administrative Board

The UPRM Administrative Board consists of the Chancellor, the Deans, two academic senators (elected among the faculty members of the Academic Senate), and an elected student representative. The Board acts as an advisory body to the Chancellor, approves the budget made by the Chancellor, and is responsible for granting tenure, promotion, and leaves of absences.

2.2.2.4 The Academic Senate

The Academic Senate is composed of the members of the Administrative Board, the Director of the Library, representatives elected from the faculties, and ten student representatives. The Senate has the authority to formulate regulations concerning all academic matters. UPRM has seven deans, including the Deans of Students, Academic Affairs, Administration, Engineering, Agricultural Sciences, Business Administration, and Arts and Sciences.

MISSION AND OBJECTIVES OF THE UNIVERSITY OF PUERTO RICO AT MAYAGÜEZ (UPRM)

As a comprehensive campus of the UPR system, the UPRM helps fulfill this mission in relationship to the tasks of its four official colleges: Agricultural Sciences (CAgS), Engineering (CE), Arts and Sciences (CAS), and Business Administration (CBA). Moreover, because this campus is the only Land Grant institution in Puerto Rico, it has as an essential part of its mission the leading role within the system regarding instruction, research, and service to the community in the different fields of engineering ("mechanical arts") and to "the fostering and development of a university agricultural system integrating teaching, experimentation, and dissemination." The Land Grant concept of instruction, research, and service to the community is present in all four colleges. In recent years, the UPRM Land Grant mission has been augmented by its additional designation as both a Sea Grant (1989) and a Space Grant (1992) institution.

The mission of the Mayagüez campus of the University of Puerto Rico is stated as follows:

Within the philosophical framework established by the University of Puerto Rico Act, the Mayagüez campus directs its efforts towards the development of educated and cultured citizens and professionals qualified to contribute in an efficient manner to the cultural, social, and economic development of Puerto Rico. The campus provides the

means to qualify professionals in the fields of business administration, agriculture, the social and natural sciences, the humanities, and engineering. This qualification process is directed, on the one hand, to the preparation of technical and professionally qualified personnel and, on the other, to the formation of responsible citizens, having the essential attitudes and values of a democratic society.

To achieve its mission, the Mayagüez campus has set forth nine primary goals, as stated in the Administrative Board's Certification Number 96-97-603 (See Appendix C). Significantly, these goals are student-centered and have been established to contribute to the professional development and growth of students at UPRM. The goals are as follows:

1. *To have students become the central figures and the "reason for being" of UPRM.* The UPRM will ensure that all students have access to educational programs characterized by academic excellence in order to provide a complete and integral development of our students.
2. *To have the UPRM become an integral institution characterized by excellence in all its components* (e.g., teaching, research, and service to the community). The UPRM offers an extensive and diverse set of educational programs, including those at the level of graduate education.
3. *To encourage an entrepreneurial spirit among its students.* The "entrepreneurial" concept is broadly construed and defined to include not only individuals dedicated to generating and developing commercial enterprises, but those who are visionaries, generating new ideas and promoting change in all aspects of human knowledge.
4. *To internationalize the institution.* As a modern institution of higher education, the UPRM must participate in all aspects of international education, not only through academic programs and research, but also in the dissemination of information and knowledge. In the process of internationalizing our institution (with a particular emphasis in Latin America), we must work to have a positive influence in the social, humanistic, economic, technological, and political aspects of this hemisphere.
5. *To strengthen research and development.* The UPRM has a history of scientific research sustained through external funding from state, federal, and private agencies. Our participation in creative activities and the quality of our research results, carried out by faculty and students, has contributed to increasing UPRM's knowledge base and the well-deserved prestige of our faculty and alumni. In order to increase institutional research contributions to the economic development of Puerto Rico and our international competitiveness, we are dedicated to strengthening and expanding

our research opportunities based on the needs of the private and public sectors in Puerto Rico.

6. *To promote a complete computerization within the UPRM.* Recent advances in technological information systems have established new horizons for the search and exchange of data and information. The technological growth of our society depends on our capacity to efficiently utilize these emerging methods of communication. Therefore, the UPRM encourages the adoption of state-of-the-art technology to empower the academic community through the effective use and management of computerized systems.
7. *To evolve into an institution that is operationally agile, efficient, and auditable.* The UPRM must generate an administrative organization that is expedient and efficient, one that provides prompt solutions to the problems and situations that the academic community confronts.
8. *To encourage close collaboration with and provide ample service to the community.* The UPRM, as a principal part of a state university, is obligated to become an educational center, which will analyze and generate new ideas through research and creative initiatives to promote socioeconomic development and the adoption of new technology in Puerto Rico. We must also promote and enhance our presence in, and our contributions to, the social and technological processes within and outside of Puerto Rico, particularly in the regions of the Caribbean and Latin America.
9. *To establish a Master Plan with a focus on infrastructure and physical installations.* The UPRM will develop a Master Plan for infrastructure and will establish an efficient preventive maintenance program in order to ensure that we deliberately direct our efforts to preserving and maintaining both campus aesthetics and proper functioning of our installations. Necessary improvements must ensure the conservation and renovation of the original designs of our historical buildings.

SIGNIFICANT CHANGES - MISSIONS AND GOALS

In 1997, the UPRM Administrative Board approved and established the institutions strategic plan (Certification Number 96-97-603) and the goals of UPRM were modified to include the nine goals mentioned previously. These nine UPRM goals reflect the responsibility of the institution toward students, teaching, research, and service to the community. The new strategic plan, entitled "Towards the Third Millennium," is aimed at internationalizing the UPRM, developing and

strengthening research, obtaining state-of-the-art technology for the entire university, and establishing a master plan to improve and modernize the institutions infrastructure, among others. There have been a number of efforts generated in an attempt to link the UPRM strategic plan, and those of all of its units, to the institutions budgetary projections. Further, all funds requested as part of the annual budget have been based on the institution's goals and objectives, as set forth in its strategic plan.

In 1999 the Office of the President initiated a process to revise the strategic plan of the UPR. All institutions forming part of the UPR system had to work in conjunction with the Central Administration to generate a revised systemic strategic plan that would take into account all the UPR academic units and the changing nature of the Puerto Rican society within a global context. As a consequence, all four academic colleges and the Offices of the Dean of Students, Administration, and Academic Affairs at the UPRM developed strategic plans with active participation from the academic community. All UPRM departments will align their strategic plans with those of the institution and the broader UPR strategic plan.

These initiatives have provided an opportunity for the academic colleges, their departments, and the UPRM as a whole to take a new look at its mission, objectives, and initiatives for further growth and development. These actions, in turn, serve to demonstrate the commitment of the UPRM to establish new guidelines, processes, and initiatives to accomplish its mission and objectives, which are compatible with the emerging changes and trends that characterize a global and international society, economy, and technology in the Twenty-first century.

Despite a move toward more autonomy for the academic units within the UPR and the strategic planning of different colleges and academic departments, the general feeling among faculty and employees is that the decision-making process regarding budgetary issues, planning, and development is still very centralized. Many decisions are made at the level of the Board of Trustees and the President's Office without consulting the academic community. Moreover, politics is perceived as playing a significant role in the appointment of the members of the Board of Trustees, the Chancellors, and even the Deans of the different colleges. Most appointments are based on the political preferences of the nominees. The UPRM is still characterized by frequent turnover at all

administrative levels, from the Chancellor to the Deans to the Department Directors. This instability among our administrators has seriously impacted the development of our institution (See Appendix D).

2.2.4 ACADEMIC PROGRAMS

SIGNIFICANT CHANGES - ACADEMIC PROGRAMS

Since 1995, the last accreditation period for the MSA, significant academic changes have occurred in the UPRM, including:

- In 1995, a major curricular revision of the Baccalaureate program in Physical Education in the CAS led to the creation of three areas of specialization : Teaching in Physical Education, Recreation, and Coaching. Since the 1996-97 academic year, undergraduate students have been admitted in all three areas.
- In 1997, the CBA created a Baccalaureate in Office Administration; curricular revisions for this program are pending approval by the Council on Higher Education.
- In December 1999, the Council on Higher Education approved a proposal to offer a Master's degree in Nursing from the UPR Medical Science Campus at the UPRM campus through video conferencing and evening courses. While UPRM students will take the majority of the coursework at the UPRM campus with faculty from this institution, the UPR Medical Sciences Campus will award the degree. This graduate Nursing Program has been extremely successful, with a total of 57 new graduate students since its inception in 1999.
- By the end of the 1999-2000 academic year, the Board of Trustees had approved the new Ph.D. program in Information and Computational Sciences and Engineering. The program is interdisciplinary, representing a joint effort between the Department of Mathematics (CAS) and the Department of Electrical and Computer Engineering (CE). The program currently awaits approval from the Council on Higher Education.
- The UPRM Academic Senate also approved a new Master's degree program in Computational Sciences during the first semester of the 1999-2000 academic year. This program is another joint effort between the Department of Mathematics (CAS) and the Department of Electrical and Computer Engineering (CE). The program is pending approval from the Council on Higher Education and it is expected to begin in August 2001.

- A Ph.D. program in Chemical Engineering was created and approved in 1999 and began its academic offerings in January 2000 with four students.
- A new Master's degree program in Industrial Engineering has received approval by the Council on Higher Education and is now functioning well.
- A major curricular revision of the Master's Degree in Business Administration in 2000 led to the creation of four specializations: Finance, Marketing, Industrial Management, and Human Resources.
- In December 1997, the Associate Degree in Secretarial Sciences and the Bachelor's degree in Economics from the CBA were inactivated.
- The Associate Degree in Nursing has been suspended since July 1998.
- In 2000, the Department of Social Sciences began working on a proposal to create a Master's program in Applied Social Science Research. It is expected that the proposal will be approved in the department and submitted to the Faculty of Arts and Sciences for their evaluation and approval by the end of the 2001-02 academic year.

2.2.5 Faculty

The faculty of the UPRM is its primary resource in the educational process. Throughout the years, the UPRM has built a strong, stable, and highly qualified faculty dedicated to teaching and research. Faculty members aim their efforts at three primary areas, which are instruction, research, and providing services to the community. Although most UPRM faculty would agree that one of their primary missions is to teach, the number of researchers and faculty dedicated to research, as part of their academic workload, continues to increase.

Under the UPR General Regulations, faculty members include teaching personnel, librarians, Agricultural Experiment Station researchers, and extensionists affiliated with the Agricultural Extension Services. Table 2.2.1 shows the composition of the UPRM faculty dedicated to teaching and research for the 1999-2000 academic year.

Table 2.2.1: Faculty Composition, UPRM, 1999-2000 Academic Year

	Total	CAGS	CAS	CBA	CE
Gender					
Male	62.0%	66.0%	60.1%	43.3%	87.6%
Female	38.0	34.0	39.9	56.7	12.4
Education					

Ph.D.	56.8	78.0	57.2	16.7	62.7
Masters	32.2	6.0	34.2	63.3	22.2
BA/BS	11.0	6.0	8.6	20.0	15.1
Academic Rank					
Instructor	16.6	4.6	15.3	29.3	17.8
Assistant	17.2	20.9	16.5	12.1	19.0
Associate	23.2	30.3	26.0	19.0	17.3
Full	43.0	44.2	42.2	39.6	45.9
Tenure Status					
Tenured	64.3	76.0	64.9	60.0	61.1
Non-tenured	35.7	24.0	35.1	40.0	38.9

(N=739)

During this period, the UPRM counted with 739 teaching faculty. Males represent the majority (62%) of the faculty at the UPRM when compared to females (38%). However, the overwhelming majority of faculty in the CE are males (87.6%) while the majority of faculty in the CBA are females (56.7%). In 2000, the majority of the faculty (56.8%) had completed a Ph.D. Again, significant differences occur among the academic colleges in terms of completion of the Ph.D. For example, 78% of the faculty in the CAgS had completed the Ph.D. compared to 63% for Engineering, 57% for Arts and Sciences, and only 17% for the CBA. Most of the faculty at the UPRM are full-professors (43%) and tenured (64.3%).

The majority of the UPRM faculty still have a very high teaching load (12 credits per semester). Although it is a general practice in the CE for faculty to receive from three to six credits of release time for research, this is not the case in the other colleges. Although release time may be available for research, the high student demand for courses in many academic areas has generated some problems in these areas and has increased the necessity for faculty on temporary contracts and workloads in excess of twelve credits (See Appendix E). Low salaries for faculty in general and engineering faculty specifically has generated problems in the recruitment and retention of highly qualified faculty and researchers at the UPRM. Although significant salary increases have taken place, the UPRM system continues among the lowest faculty salaries when compared to institutional counterparts in the United States.

Faculty development and training is key for the growth and development of the UPRM. Our institution still continues to recruit promising graduate students and award them financial aid plus a monthly stipend to pursue a Ph.D. in areas critical to the institution (See Table 2.2.2).

TABLE 2.2.2: Distribution of Faculty with Study leaves between the 1994-1995 and 1999-2000 Academic Years, by Colleges and Departments

College & Department.	1994 - 1995	1995 - 1996	1996 - 1997	1997 - 1998	1998 - 1999	1999 - 2000
Office of Academic Affairs	1	1	0	0	0	0
Business Administration	0	2	1	1	2	1
Arts & Sciences	5	2	4	5	0	2
Agricultural Sciences	1	4	2	2	0	1
Engineering	1	0	3	2	2	2
TOTAL	8	9	10	10	4	6

Study leaves are a very important means for fulfilling the long-term faculty needs of the UPRM and the different colleges. Sabbatical leaves also provide an opportunity for our faculty to carryout research, work on publications, and undertake professional development. Tables 2.2.2 and 2.2.3 summarize UPRM achievements in these areas.

TABLE 2.2.3: Distribution of Faculty with Sabbatical between the 1994-1995 and 1999-2000 academic years, by Colleges and Departments

College & Department	1994 - 1995	1995 - 1996	1996 - 1997	1997 - 1998	1998 - 1999	1999 - 2000
Office of Academic Affairs	0	0	0	0	0	1
Business Administration	0	0	0	0	1	1
Arts & Sciences	13	10	10	12	2	7
Agricultural Sciences	0	1	1	1	0	0
Engineering	4	6	3	3	1	1
TOTAL	17	17	14	16	4	10

SIGNIFICANT CHANGES - FACULTY

2.2.5.1 Center for Professional Enrichment

To promote the professional development of our faculty, in 1996 the UPRM Administrative Board approved Certification Number 96-97-596 which created the Center for Professional

Enrichment (CEP). This Center, based in the Office of the Dean of Academic Affairs, has as its primary mission to encourage the use of diverse strategies, methodologies, and techniques to promote excellence in teaching, focusing on improving the quality of teaching and student achievement. The CEP is now responsible for the Curriculum for the Improvement of Teaching (CIT). Starting in August 1997, all new faculty members must complete 29 contact hours in the CEP as part of their professional development. Participation in this program is required and will be considered in the promotion and tenure process.

In addition, the CEP provides orientation to administrators regarding the mission of this center and faculty responsibilities; it coordinates the yearly orientation activities for newly hired faculty and graduate teaching assistant; it programs faculty retreats to focus on academic and research issues of interest to the faculty; it coordinates activities with the different academic departments and generates new curricular activities and initiatives of interest to these departments and their faculty; and it has served as a model and has collaborated at the systemic level of the UPR to provide training opportunities for other faculty throughout the system. Appendix F includes all the workshops and activities organized and sponsored by the CEP since its beginning in 1996. Unfortunately, the CEP has faced significant funding limitations, particularly since 1999. Although the current administration is strongly committed to strengthening the CEP, we must work to ensure the institutionalization of this important center.

2.2.5.2 Faculty Evaluation

Although the UPRM Administrative Board approved the Certification Number 86-87-476 (see Appendix G) to regulate the faculty evaluation process for tenure and promotions and although the UPR General Regulations provides a general framework for faculty evaluations, there is no uniform evaluation process for faculty tenure and promotion at the UPRM. Further, the modules used for faculty evaluation are outdated and obsolete. However, we have developed a number of significant initiatives to improve the faculty evaluation process.

SIGNIFICANT CHANGES - FACULTY EVALUATION

In September 1999, the Institutional Committee for the Evaluation and Development of Faculty at the UPRM was reinstated and it has been working on establishing an efficient and uniform evaluation process for faculty. The Student Faculty Evaluation Module has experienced significant modifications and it is currently being validated. The Committee has also been working on new faculty evaluation and auto-evaluation modules. Once this process is completed, the UPRM will have an efficient, up-to-date, uniform, and fair evaluation system.

2.2.6 RESEARCH AND DEVELOPMENT

The UPRM places a strong emphasis on research and research training. Research is a very important component of all academic colleges but particularly in Engineering, Arts and Science, and Agricultural Sciences. Practically all Engineering faculty receive six credits of release time for research. Further, as a general practice, the CE awards six credits of release time to its new faculty and can provide up to \$10,000 in seed money to encourage new research initiatives. In the other colleges, faculty receive release time for research as part of the UPRM cost-sharing agreement with funding agencies. However, to further stimulate research, the CAS has a program to award up to three credits of release time for research to faculty without external funding.

UPRM researchers have received numerous grants from external sources such as the National Science Foundation, Department of Defense, Department of Energy, National Institutes of Health, Howard Hughes Foundation, NASA, US Army Corps of Engineers, US Department of Interior, the National Oceanographic and Atmospheric Administration (NOAA), National Sea Grant Program, the US Geological Survey, AT&T, Digital, Upjohn Pharmaceuticals, Baxter, Raytheon, Hewlett Packard, IBM, Intel, White Westinghouse, the US Department of Transportation, the Federal Emergency Management Agency (FEMA), the Small Business Administration (SBA), the Department of Agriculture, the Commonwealth of Puerto Rico, as well as local governmental and private agencies.

During the 1999-2000 academic year, the UPRM received \$13.4 million in external funding for research. This figure represents a 33% increase compared to the 1998-99 academic year. In 1999-2000, 200 research proposals were submitted to external funding sources representing a 34% increase relative to 1998-99. Over \$55 million were requested in external funds during the 1999-2000 academic year. Approximately 49% of the proposals submitted in 1999-00 were from the CE, 47% from the CAS and 3% from the other two colleges.

The CAS and CE have generated almost all the external funds for research administered through the Research and Development Center. The CAgS manages most of its research funds through the Agricultural Experiment Station; the CBA has not yet written many proposals for external funds. However, the strategic plans for all colleges have as one of their primary objectives to increase the number of faculty engaged in research and the amount of external funds received for research. Clearly, there is a need to encourage the development and submission of research proposals among faculty in the CBA and those in the Arts within the CAS, although significant progress has occurred in this area.

2.2.6.1 Research and Development (R&D) Center

The UPRM established the Research and Development (R&D) Center as the primary office to promote, encourage, and manage research and development activities in the areas of engineering, technology and science, and in the diverse academic areas. The Center's mandate and principal functions are to promote, coordinate, and administer externally funded research projects conducted by UPRM faculty members; to provide administrative support to researchers; and to generate and disseminate information on funding opportunities to all UPRM faculty. The Center offers technical and administrative assistance to the research community through its Accounting and Finance, Budget, Purchasing, Receiving, and External Resources Offices.

However, despite the fact that the R&D Center has been very effective in serving the research community and in reducing the red-tape and the long waiting time period associated with many routine services (such as purchasing and receiving equipment and materials), it has experienced a significant reduction in personnel as a result of a variety of administrative changes in the UPRM.

Consequently, the services provided by this office to the research community have been hampered. The UPRM needs to strengthen this research unit and provide additional funding to improve the services. A copy of the R&D Annual Report for 1999-00 has been included with the PRR (See Appendix H).

2.2.6.2 Research Facilities

In addition to the numerous research laboratories, the UPRM has a number of research and development institutes that provide invaluable support to research activities and are the training grounds for undergraduate and graduate students. Some of these dynamic research units, which are primarily funded through external sources, include, among others:

- The Agricultural Experiment Station
- The Center for Applied Social Research (CISA)
- The Center for Computing Research and Development (CECORD)
- The Center for Hemispheric Cooperation in Research and Education in Engineering and Applied Science (CoHemis)
- The Center Research Instrumentation Laboratory (CRIL)
- The Heat and Mass Transfer Research Laboratory (Hmtrl)
- Laboratory for Applied Remote Sensing and Image Processing (Larsip)
- The Learning Factory (Manufacturing Engineering Education Partnership with the UPRM, Penn State University, and the University of Washington)
- NASA Pascor
- Puerto Rico and the US Virgin Islands Climatology Center
- Puerto Rico Water Resources Research Institute
- Seismic Network
- Tropical Center for Earth and Space Studies
- The Center for Research Excellence in Science and Technology
- The Civil Infrastructure Research Center
- The Puerto Rico Resource Center for Science and Engineering
- The Puerto Rico Transportation Technology Transfer Center
- The UPR Sea Grant College Program

It is important to highlight that excessive academic workloads and administrative bureaucracy, the lack of economic incentives, the lack of library resources, and the lack of

recognition continue to influence the amount of time faculty dedicate to research and the number of faculty engaged in research initiatives.

2.2.6.3 Distance Learning

SIGNIFICANT CHANGES - DISTANCE LEARNING

The recent history regarding the development of distance learning at the UPRM is represented by two parallel efforts: (a) the TELEDIS program, based at the Agricultural Extension Service (AExt) office and (b) the offering of distance learning courses for credit. The UPRM distance learning initiatives were originally based in the Chancellor's Office and later in the Office of the Dean of Academic Affairs.

The TELEDIS program has employed interactive videoconferences since 1996 to provide not-for-credit training and to serve as a medium for administrative meetings between the UPRM and the UPR-Arecibo campuses and the AES office located in the Botanical Garden of the UPR-Río Piedras campus. Currently, TELEDIS benefits from the digital telecommunications network of the UPR (Puerto Rico Digital Video Network or PRDVnet), which joins the five AES regional districts using interactive videoconferencing. The network promotes AES's training, academic instruction, and agricultural research. In addition to serving Extension personnel, the network is also useful to farmers, youth, families and communities.

A second distance learning initiative has been the use of interactive videoconferences to offer and receive academic courses, for credit, between the UPRM and other academic institutions within and outside the UPR system. During the academic years 1998 through 2000, the UPRM originated or received ten distance learning courses in the areas of business administration, chemical engineering, electrical engineering, computer science, nursing, agricultural economics, and advertising.

A major impetus for the production and offering of distance learning courses was the creation, in 1998, of a Distance Learning Coordinator position under the Office of the Chancellor and later under the Office of the Dean of Academic Affairs. This person oversees the production, offering, marketing, evaluation, and distance learning training efforts on campus, chairs the UPRM

Distance Learning Committee and represents the UPRM on the UPR Distance Learning Systemic Committee.

The UPRM Distance Learning Institutional Committee (DLIC) was created in 2000. This committee has been charged with the dual responsibility of developing the institutional distance learning policy and fostering and overseeing distance learning strategic planning for the UPRM. The position for Institutional Distance Learning Coordinator is currently vacant and the DLIC must be reactivated.

Our distance learning efforts rely on two Picture Tel Concorde 4500 units connected to a dedicated T-1 line. This connection allows the UPRM to conduct point-to-point or multi-point interactive videoconferencing to any of the campuses of the UPR and it also allows up to four simultaneous ISDN-based interactive videoconferences with institutions anywhere in the world. The UPRM owns an institutional license of WebCT, a widely used web course management software which is currently being used by a number of faculty at the UPRM. WebCT is used as web support for face-to-face courses and as web support for videoconference courses.

Faculty and staff training have followed two main approaches: seminars to provide the academic community with background knowledge and technical skills on distance learning; and faculty and staff workshops and presentations to provide in-depth coverage of distance learning topics. In April 2000, for instance, the UPRM organized and hosted the first faculty workshop on distance learning in Puerto Rico, with videoconference participation of more than 75 faculty spread across three campuses of the UPR. Future activities will target university administrators, additional faculty and staff, and the student body. We are working to promote the use of distance learning in a variety of academic and administrative settings. Thus far, all the primary academic colleges have offered courses through distance learning methodologies and technology.

To further develop the distance learning initiatives, UPRM has been working since 1999 to establish a Multi-Media Distance Learning Center. This center will be fully equipped with state-of-the-art technology that will allow the academic community to take full advantage of courses, workshops, conferences, and meetings using distance learning initiatives. Office space for the Center

has already been allocated in the Monzón building, a significant amount of funds have been identified and approved, and some of the necessary equipment and materials have already been purchased. The Multi-Media Distance Learning Center will be fully operational during the 2001- 2002 academic year.

2.2.7 ADMISSIONS AND STUDENT SERVICES

2.2.7.1 Admissions

Students requesting admission to the UPRM must apply for admission with the Admissions Office. All applicants must submit evidence of having a high school degree, or its equivalent, from an institution accredited by the Department of Education in Puerto Rico. Prospective applicants must take the Scholastic Aptitude Test administered by the College Board. Prospective students must submit records of all their high school studies and reports of the entrance examination tests.

Admission to the UPRM is based on a formula that generates an admission index for each applicant. The student's General Admission Index is based on 50% the applicant's high school grade point average, 25% the verbal score, and 25% the mathematical score of the College Board test. These raw scores are converted to a scale to obtain the General Admission Index. Admission is granted to students whose index strictly complies with the minimum value established by the Administrative Board (based on the recommendations of the academic departments and Deans) for the program for which the student applies. The Admission index may vary from year to year depending on the demand for a particular program and the number of students that can be admitted that program (Appendix I includes the General Admission Index for 1994-95 and 1999-2000).

Admission to the UPRM can also be granted to foreign students whose previous studies are comparable to those required in Puerto Rico. Candidates must submit evidence of their ability to undertake university work. Further, students from countries where the College Board offers entrance examinations must take the same and submit the corresponding test scores to the UPRM Admission Office.

Students from the UPR system and other universities outside the UPR system can also apply for admission or transfer to the UPRM. These students must be free of any disciplinary actions, must have completed at least 48 credit hours of university work, and must comply with the specific departmental requirements (e.g., GPA, required courses, etc.) to which they are requesting admission.

2.2.7.2 Student Services

The Office of the Dean of Students provides a variety of essential services and activities that serve as support systems to the student body and the academic programs at the UPRM. Students are encouraged to take full advantage of these services and to actively participate in extra-curricular activities, which are designed to enrich their personal development and academic growth. Some of the essential services provided by the Office of the Dean of Students include:

Financial Aid: The Department of Financial Aid administers financial aid programs to students who need financial help in meeting the costs of their education.

Approximately 72% of the UPRM students qualify for financial assistance. Financial aid is provided through federal, state, institutional, and private sources. The UPRM has established a set of norms of academic progress for eligibility to the financial aid programs, thereby fulfilling Federal Department of Education requirements. Financial aid programs include: Pell Grant Program, Federal Supplemental Education Opportunity Grant, State Student Incentive Grant, Institutional Supplemental Assistance Program, Legislative Scholarships, private scholarships and grants, Federal Perkins Loans, William D. Ford Direct Loan Program, Geer Loan Program, and Federal Works Study Programs. Students can also receive research stipends through participation in faculty research projects.

Health Services: The Department of Health Services offers primary care health care, free of charge, to all its students. Some of the services provided include medical consultation, dental care, emergency and short stay recuperation care, ambulance services, clinical laboratory tests, health education programs, and coordination and referrals to off-campus health providers for students under the university health insurance plan or personal health insurance plans. The services are classified in two areas: preventive medicine and therapeutic medicine. The UPRM has continued to expand its services and hours of operations to meet the needs and demands of a growing and diversified student body.

Counseling and Guidance: Counseling and guidance are offered to students so that they can achieve a better understanding of themselves and make an adequate adjustment to the college environment. Programs and services are offered to diminish the negative impact of everyday stress and to help students cope with the new academic and environmental demands. The Department of Counseling provides personal counseling, career and life planning, testing, and psychological and social work services. Counselors assist students with personal, educational, and career development issues and concerns. They also teach a semester-long freshmen orientation course on university success and survival skills. This course was designed, in part, to deal with issues and problems that students confront in a university setting. One of the primary goals of this course is to allow students to adapt to university life and, therefore, reduce the currently high attrition rates among undergraduates at the UPRM. Psychologists provide individual therapy, crisis intervention, and workshops and lectures on personal, emotional, and social growth. Social workers provide individuals, couples, and family intervention regarding social issues such as parental relationships, communication, violence, marriage, pregnancy, and financial needs, among others. Other services and resources available to students include a career resource library, tutoring programs, and a freshmen orientation week.

Off-campus housing: The Department of Student Housing maintains an updated register of off-campus housing alternatives, provides assistance with the selection of adequate and affordable housing, informs all parties involved regarding criteria and legal issues concerning lodging agreements and rental contracts, advises home owners about state requirements and regulations on lodging, and offers educational activities on themes of general interest to students and home owners.

Placement: The Placement Department's main objective is to provide students with the best resources available that will help them obtain permanent, summer, and temporary employment. The services provided include the arrangement of on-campus interviews with prospective employees, the coordination of employer presentations, and job referrals. The department offers seminars and workshops that help develop job-hunting techniques, resume preparation, and interviewing skills. The department organizes the annual Job Fair where companies and government agencies in Puerto Rico and the United States participate. These agencies provide a diverse number of job opportunities for students of basically all academic backgrounds. This is the largest job fair of its kind in Puerto Rico.

Student Exchange Programs and International Student Services: The UPRM is an active member of the National Student Exchange (NSE) Consortium and the International Student Exchange (ISE) Programs. The NSE program is an excellent mechanism for our students to take coursework at another college or university in the United States and its territories. The ISE offers students an opportunity to take courses in 25 different countries. The programs encourage students to experience and learn from different regional and cultural perspectives and to broaden their educational background and personal experiences.

Athletic Activities: Students and university personnel are encouraged to participate in organized sports and other recreational physical activities sponsored by the Department of Athletic Activities. The UPRM is a member of the Inter-University Athletic League and fully participates in a variety of inter-collegiate sports. The UPRM is also a corresponding member of the National Collegiate Athletic Association (NCAA) and is in the process of becoming an active member of this association.

Band and Orchestra: Students with different musical talents are encouraged to become members of different music groups such as the concert band, the marching band, choir, string ensemble, and other pop rock and Latin music groups.

Quality of Life Office: This office was recently established (1997) to offer a variety of services to promote a safe campus community. The office encourages a safe and secure environment to contribute to the wellness of our institution and its students. Proactive prevention programs are offered to deal with problems like campus crime, violence, sexual assault, and the use and abuse of alcohol and drugs.

Social and Cultural Activities: The UPRM organizes and sponsors a variety of social and cultural activities for the enjoyment of the entire campus community. These events are free of charge and include concerts, shows, dances, theatrical events, films, presentations, tournaments, and exhibitions by recognized artists and performing groups. Special events such as the pep rally promote school spirit and student involvement.

Student Government: The General Student Council is the student government at the UPRM. The Council is composed of representatives from the different colleges elected by the student body and provides students the opportunity to express their views to the university administration and to contribute to the creation and development of institutional policies and regulations.

Student Organizations and Clubs: The UPRM has over 100 recognized student organizations and clubs that serve the needs of the students. These organizations

range from campus branches of national organizations to local clubs and special interest groups.

Student Center: The student center constitutes the UPRM community center, and it is open to students, faculty, staff, alumni, and visitors. It is a focal point for cultural, social, and recreational activities. This center also provides study areas for our students. The center houses many offices and groups such as the Office of Counseling and Guidance, the Student Housing Office, Placement, Social and Cultural Activities, Student Exchange Program, International Student Services, Alumni Office, General Student Council Office, graphic arts workshop, art exhibitions room, recreational facilities room, campus cafeteria, bookstore, post office, and a hair styling salon, among others.

Other Services: The UPRM offers a variety of other offices and organizations designed to provide our students with a diverse set of services. These include, among others, the University Service Enterprises, the Press Office, and the Alumni Office.

It is important to note that in September 1998, the UPRM Administrative Board approved Certification Number 98-99-81 which required that all offices that provide services to the academic community remain open during lunch hours (e.g., 12:00 to 1:00) and to expand their working hours to provide services from 7:30AM to 5:30PM. One of the goals of this Certification was to allow students to have additional periods of time with access to these offices and their services. However, a very limited number of administrative offices at the UPRM have implemented this initiative.

2..2.8 THE CAMPUS LIBRARY

The UPRM General Library consists of a Main Library, two special departmental collections, and the Educational Technology Unit. The Main Library is housed in an air-conditioned building consisting of a central section built in 1963 and the North and South wings added in 1989, covering an area of approximately 124,335 square feet. The Library has a seating capacity of 1,278. It also has 19 closed study carrels for graduate students and faculty, ten study rooms for group discussions, two library instruction classrooms, and a microform room.

The Library serves students, faculty, researchers, extension service officers, the administrative staff, and other members of the academic community and the community at large. It fully supports the educational and research mission and objectives of the institution by providing the

necessary library and informational resources, facilities, and services. To fulfill its goals, the Library is divided into three major service areas: Technical Services, Public Services, and Educational Technology. There are also two special collection areas in the R&D Center and in the Marine Sciences Department.

The Library's Educational Technology Unit consists of an Audiovisual Services Department and the Closed Circuit Television Department. Audiovisual services include the following units: graphic arts, audio studio, an audio-visual equipment lending and repair center, a Film Library. Closed Circuit Television (CCTV) produces instructional and educational TV programs and provides videotaping services for a diverse number of campus activities. Other essential services include multi-channel broadcasting of video programs to classrooms and assembly halls, teleconferencing, satellite downlinks, a television studio, a photographic laboratory, and a video library.

The Library's holdings includes 217,114 volumes of books; 7,000 journal titles; 500,000 microfiches; 86,218 micro cards; 18,000 microfilms; 590,000 government documents; 714 films; 8,400 maps; 7,860 sound recordings; 600 musical scores; 916 sound magnetic tapes; 24,600 slides; 3,800 video-cassettes; 687 filmstrips; 2,500 CD ROMs; 2,500 theses; 2 million patents, and 2.1 million US issued trademarks.

The Library is the depository for US Government publications; for the Interamerican Institute of Agricultural Cooperation (IICA) in San José, Costa Rica; and for the Service Center for Aging Information (SCAN). It is one of the Coordinating Agencies of the Puerto Rico Census Data Center, under the Planning Board of Puerto Rico; it is also a depository for the publications of the US Census Bureau. In 1995, the Library became a member of the Patent and Trademark Depository Library Program of the US Patent and Trademark Office. It is the only participating library outside the 50 US states and the only one of its kind in Puerto Rico, the Caribbean, and Latin America.

The Library's main subject interests include agriculture, animal industries, engineering, natural and applied sciences, technology, marine and environmental sciences, energy, economics, business administration, nursing, humanities, behavioral sciences, and geology. Library services are fully automated and the online catalog can be accessed from terminals and computers installed in the

Library and throughout the campus, and through the internet. A local area network (LAN) allows for the use of databases in CD-ROM from various collections. Cataloging and classification is done online using the bibliographic utility of the Online Computer Library Center (OCLC).

The Library is also a member of the Southeastern Library Network (SOLINET) and the United States Agricultural Information Network (USAIN). In cooperation with the State Department of Education, the Library runs the Puerto Rico Cooperative Information Network, which allows public school libraries throughout the Island to share their resources. In January 2001, the Library initiated a subscription to IEL Online, making our institution the only one in Puerto Rico to provide Internet access to the collection of publications of the Institute of Electrical Engineers in the United States and the Institute of Engineering in Great Britain. Therefore, students and faculty now have access to publications, professional journals, and conferences from 1988 to the present.

Members of the UPRM Library Staff offer a variety of formal courses as part of the initiatives to provide additional library support to the academic community. The staff offer a variety of courses such as Seminars on Horticulture, Bibliography and Library Research in Biological Sciences, Bibliography and Library Research in the Social Sciences, and Research Methods in Libraries, among others.

SIGNIFICANT CHANGES - THE CAMPUS LIBRARY

Some important changes have occurred in the UPRM Library in response to the 1995 SSR. For example, an Institutional Evaluation Committee was formed, comprised of faculty members, a professional librarian and the Director of the Library. This Committee evaluated the Library's serials titles and recommended the cancellation of titles which were not being used or which were too specialized for our patrons. This action resulted in a \$151,000.00 savings which can now be used to cover part of the increase in subscription costs for professional journals. The Ariel System, an electronic transmission system for the delivery of documents, was acquired in January of 1996, the first of its kind in any higher education institution in Puerto Rico.

A special collection for the use of faculty, researchers, and students of Spanish and linguistics in general was set up on October 16, 1997. This collection consists of extremely valuable bibliographic material and memorabilia donated to the Library by two distinguished faculty members, Dr. Josefina Rivera de Alvarez and Dr. Manual Alvarez Nazario. This collection is housed in the South wing of the Library.

A large area on the Library's first floor, in the South wing, is being converted into the Electronics Resources Center. Several proposals have been submitted to assure external funds to complete this project. This expansion will enable the Library to provide approximately fifty computer stations with access to the internet and a number of electronic databases.

In December 2000, the Library was able to subscribe to the publications of the IEEE online with access to fifteen simultaneous users. With funds assigned through a Title V Proposal, the Library prepared a room with the latest technological advances such as a "smart board" which can be used for library instruction and workshops. The Marine Sciences Collection was moved to its new location in May 1999. It is now housed on the first floor of the Physics Building in an area of approximately 2,100 sq. ft.

Despite the significant progress and growth that the Library has experienced since 1995, funding continues to be a serious issue. The Library budget needs to grow according to the needs and the services that are required by the academic community. Despite the fact that the UPRM continues to grow and the services offered by the Library continue to expand, the available physical space for the library has remained the same. Finally, in terms of staffing needs, library personnel has diminished while the General Library has been increasing its services and outreach efforts and has opened a number of new collections or departments.

2.2.9 PHYSICAL PLANT AND EQUIPMENT

2.2.9.1 Physical Plant

As a land-grant, sea-grant, and space-grant institution, the UPRM territory extends beyond the Mayagüez Campus. For example, the Agricultural Experiment Station (AES), which forms part

of the CAgS, has two central offices and carries out its major research activities at the two primary research centers: Mayagüez and Río Piedras (where the facilities for the UPR Central Administration are also located). Further, the AES has six substations with a total area of more than 2,000 acres of land distributed in different geographical and ecological zones in Puerto Rico. The Agricultural Extension Service (AExt), also part of the CAgS, has 69 offices located in 69 municipalities throughout Puerto Rico. The primary goals of the AExt is to maintain a prosperous agriculture, improve the quality of family life, and provide an adequate orientation and guidance for youth and for the development of community resources.

SIGNIFICANT CHANGES - PHYSICAL PLANT AND EQUIPMENT

The UPRM infrastructure has experienced significant changes since 1995 in order to improve the services that we offer to our students and the entire academic community:

- In 1993, the construction of a new building for the Department of Chemistry was initiated. This project, at a cost of over \$20 million and with over 200,000 square feet, was completed in 1996. This state-of-the-art building provides the necessary facilities, equipment, and resources needed to train undergraduate and graduate students in the field of chemistry.
- In 1996, an expansion of the Chemical Engineering building was finalized at a cost of over \$515,000. This expansion allowed the addition of three classrooms, ten offices for faculty, and an amphitheater with a seating capacity of 90 persons.
- In 1997, the President of the UPR granted UPRM \$216,000 for the development of new facilities for classrooms and office space for the faculty of the Department of Agronomy and Soils.
- In 1998, a remodeled Monzón Building (which originally housed the Department of Chemistry) provided the Department of Mathematics with new classrooms, offices, administrative offices, and computer laboratories. As a consequence of their move, the space in the Chardón Building, which Mathematics had occupied, was redistributed to provide more classrooms and office space to the other departments housed in this building (i.e., Humanities, Spanish, English, and Social Sciences).

Table 2.2.4 shows the new facilities available on-campus as a result of the new Chemistry Building, the remodeling of Monzón, and the expansion of the Chemical Engineering building.

Table 2.2.4: New Facilities at the University of Puerto Rico-Mayagüez

New Facilities	Chemistry Building	Chemical Engineering	Monzón	Totals
Classrooms	9	3	21	33
Multiuse Rooms	1	0	0	1
Seminar & Special Studies Rooms	1	0	0	8
Conference Rooms	1	0	0	1
Teaching Laboratories	26	0	0	26
Research Laboratories	42	0	0	42
Faculty Offices	37	10	32	79
Study & Tutoring	2	0	0	2
Amphitheaters	0	1	0	1
Total New Spaces	119	14	60	193

- In 1999 work started on the new building for the Department of Biology. Once this project is completed in 2002, this department will count with the necessary infrastructure and technology to house its undergraduate and graduate programs. The first phase of this new building will have 14 new classrooms, 14 teaching laboratories, 12 research laboratories, 31 offices for faculty, and 27 offices for students.
- In 2000, the Board of Trustees approved the funds for the construction of a new building for the CBA. The construction of this building will begin in May 2001. Further, the Board of Trustees also granted the funds for the design and planning for the new building for the Department of Electrical and Computer Engineering.
- In 2000 the construction of a new building was completed to serve as at the Pre-School Development Center for the children of faculty and employees at the UPRM. Although the Center was inaugurated in April 2001, this program has been functioning since 2000. At a cost of approximately \$500,000, this building has been designed to meet the needs of the academic community and its children. The Pre-School Development Center has a complete staff, including six teachers with bachelor degrees in pre-school education, a nurse, and a person responsible for the preparation of the meals. The Center will provide educational

services to about 48 students, ranging from three to five years of age, at a very reasonable cost to faculty and employees.

- Other important remodeling projects or initiatives include the Main Library, the Rafael A. Mangual Coliseum, the refurbishing of the Alumni swimming pool, and the remodeling of a building to serve as the new facilities for the Puerto Rico Seismic Network ("Red Sísmica"). Another important development at the UPRM has been the remodeling and construction of facilities to remove physical barriers for the student body, faculty, employees, and visitors who are physically challenged. In 1996, the President of the UPR authorized the disbursement of \$1.04 million for the UPRM, to proceed with a project designed to eliminate or significantly reduce any types of physical barriers for the physically challenged population in our institution. The construction of ramps to provide wheelchair access to buildings throughout the campus, repairing sidewalks to facilitate wheelchair transportation, the remodeling of bathrooms to provide access to the physically challenged population, installation of porch lifters, installation and remodeling of elevators, new parking spaces for people with physical limitations, and the purchase of scooters to provide transportation to the physically disabled population were some of the initiatives and projects implemented to comply with the American with Disabilities Act (ADA) and to ensure that everyone has equal access to an education at the UPRM.
- To alleviate the parking problems confronted by all members of the academic community, we undertook several initiatives:
 - The construction of a new parking area contiguous to the CBA which provided parking for 35 vehicles.
 - The construction of a new parking area next to the Printing Office with a capacity for 325 vehicles.
 - The development of an agreement with the Municipality of Mayagüez, in order for the academic community to have access to the parking area of the "Palacio de Recreación y Deportes" with a capacity for 500 vehicles.

- The development of an agreement with the *Compañía de Fomento Recreativo* to have access to the parking area in the Mayagüez Zoo, with a capacity for 150 vehicles.
- Installation of "mechanical arms" to ensure that only authorized personnel (e.g., students, faculty, and employees) park in the designated areas.

The construction of new parking facilities and the agreements reached with these agencies has provided us with 1,010 additional parking spaces. Furthermore, the UPRM has established a regular, quite reliable transportation system to encourage the use of mass transportation and to facilitate the transportation from the aforementioned parking areas to the main campus. Six trolleys transport students from the designated parking areas to the UPRM campus. Transportation is also provided from the Mayagüez Terrace (the most populated student off-campus residential area) to campus. Transportation services are provided, on a continuous basis, from Monday to Friday, from 6:30AM until 9:00PM. Furthermore, a more rigorous parking enforcement plan has been initiated to ensure that parking areas designated for faculty, students, and employees, respectively, are occupied by the same. Nevertheless, the lack of parking spaces for a growing academic community continues to be a serious problem at the UPRM. New strategies and initiatives are needed to alleviate this situation.

Although there has not been a structured program for purchasing vehicles annually at the UPRM, important efforts have been made to provide adequate transportation services for university personnel. Eighty-three vehicles have been purchased since 1994 and have been assigned to different departments and colleges. The availability of institutional funds for additional purchases and for the maintenance of the campus fleet is an important problem which merits immediate attention.

2.2.9.2 Other facilities

Significant improvements have been made to the services offered in the campus by adding water fountains and public telephones. To provide additional security to the campus community, illumination during night hours has been significantly improved and emergency telephones are being installed in several critical areas.

2.2.9.3 Maintenance

The UPRM is committed to initiating an intensive and pro-active preventive maintenance plan to ensure that our facilities and academic environment are conducive to learning and to the professional growth and development of the entire academic community. Despite the aforementioned changes in the UPRM infrastructure, the institution continues to confront limitations in terms of office space for faculty, available classrooms, and parking facilities. The maintenance of our facilities is also a serious issue, that needs immediate attention.

2.2.9.4 Equipment

The UPRM now uses a renovated fiber optic communication infrastructure which was completed in 1997 at a cost of over \$875,000. This infrastructure connects 42 buildings throughout the campus with a central system located in the institution's telephone office building. The new communications system has a capacity to add connections to seven new buildings. Before these innovations, only five buildings were interconnected with fiber optics. This project has been extremely important to develop and modernize the UPRM communication system infrastructure, to dramatically increase our access to the internet, and to put us in a leading position among other institutions of higher learning in Puerto Rico in the development of communication technology. In August 2000, a new communications system was installed at the telephone office building that has been converted to the central communications office at the UPRM, as Figure 2.2.1 shows.

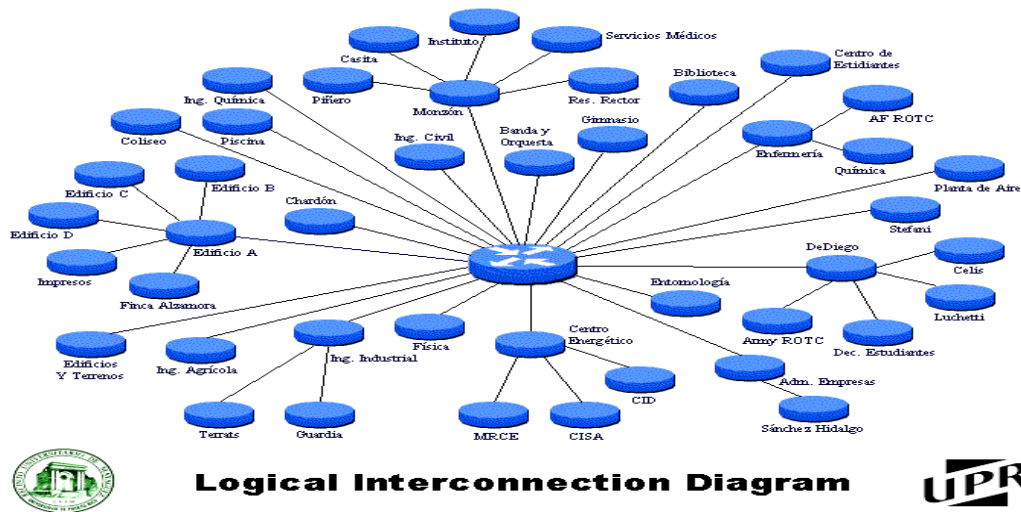


Figure 2.2.1: Communication Between Buildings at the UPRM Through Fiber Optics

We should also note that the Agricultural Experiment Stations have been provided with 56kbps dedicated lines to allow them communication with the UPRM and elsewhere. The Agricultural Extension Service Offices have access to local Internet Service Providers (ISPS), which allow them access to the internet and the UPRM communications system.

Internet communication in the UPRM has increased exponentially in recent years. Presently, communications with the outside world is accomplished through the Central Administration Office using two T1 lines. These lines are saturated 24 hours a day, making the UPRM the most frequent user of these communication systems in the entire UPR system. As a result, two additional T1 lines have been ordered to improve our communication technology. Furthermore, the UPRM communications system should experience significant improvements in the near future with participation of UPR in the Internet 2.

The UPRM Computer Center has two primary operating systems to support the institution's academic and administrative functions, respectively. A Digital Alpha 8250 computing system provides support for the administrative functions while a Digital Vax 6610 serves the academic functions of the university. The different academic colleges and departments have been expanding their computing and technological equipment to allow them to better prepare their students in these areas and to allow a greater access of faculty, students, and employees to the Internet and e-mail.

Table 2.2.5 shows the computing resources available to the academic community within the UPRM campus. Currently, the UPRM has 55 computer laboratories or centers with a total of 827 personal computers or terminals that are available for courses which require the use of this technology. All graduate and undergraduate students and faculty at the UPRM have regular access to these facilities.

The UPRM has been working since 1999 to restructure the Computer Center to improve its performance and the services that are rendered to the academic community in the administrative, academic, and research areas. The new Center for Technology and Information will have various departments or offices with specific objectives and functions. For example, the Database Department will be responsible for the management and development of the administrative processes and personnel at the UPRM. The Systems Department will attend the day-to-day functions of a computer center, such as installation of new equipment, creation of new accounts, backups, security issues, etc. The Department for Technical Services will have sole responsibility for the maintenance of computer equipment and communications and it will evaluate new technological innovations, equipment, and software. The Help Desk will provide technical assistance and support to all our "users." Finally, the Web Developer Services will be responsible for creating, maintaining, and updating UPRM web services.

Table 2.2.5: Computing Resources Available for Teaching at the UPRM

Department	Computing Resources
Nursing	1 Laboratory, 15 computers
Biology	1 Laboratory, 12 computers
Marine Sciences	1 Laboratory, 4 computers
Social Sciences	1 Laboratory, 32 computers
UPRM Computer Center	2 Laboratories, 44 computers
Campus Library	1 Laboratory, 30 computers
Economics	1 Laboratory, 22 computers
Physical Education	1 Laboratory, 6 computers
Hispanic Studies	1 Laboratory, 25 computers
Physics	1 Laboratory, 14 computers
Humanities	1 Laboratory, 10 computers
English	2 Laboratories, 56 computers
Mathematics	6 Laboratories, 115 computers
Chemistry	2 Laboratories, 33 computers
Division of Extension	2 Laboratories, 35 computers
Agricultural Sciences	3 Laboratories, 41 computers
Business Administration	4 Laboratories, 100 computers
Civil Engineering	1 Laboratory, 23 computers
Electrical & Computer Engineering	11 Laboratories, 210 computers
Industrial Engineering	2 Laboratories, 56 computers
General Engineering	3 Laboratories, 75 computers
Mechanical Engineering	5 Laboratories, 52 computers
Chemical Engineering	2 Laboratories, 34 computers

2.2.10 FINANCIAL OPERATIONS

Table 2.2.6 shows that, during the 1995-2000 period the UPRM budget, as part of the UPR general funds, increased from \$85 million in 1995 to \$131 million in 2000. This represents a 54% increase in the UPRM operational budget. However, this apparent increase in our operational budget was, in part, due to the fact that, starting in the 1996-97 fiscal year, the funds for the Agricultural Experiment Stations and the Agricultural Extension Service Offices were included as part of the UPRM budget. Prior to 1996-97, the operational budget aimed at these two units of the CAgS was included under external sources under the state government category. Therefore, if we exclude these two units from the UPRM total budget, we find that the institutional budget actually increased by 26%. The UPRM budget, as a percentage of the UPR total budget, slightly increased from 18.2% in 1995 to 20.4% in fiscal year 2000.

Table 2.2.6: UPRM Annual Budget as % of UPR General Funds Budget, Fiscal Years 1994-2000

Year	UPR	UPRM	% *
<i>1994-95</i>	\$467,891,080	\$84,960,459	18.16%
<i>1995-96</i>	516,608,432	95,264,345	18.44%
<i>1996-97</i>	571,578,387	117,067,495	20.48%
<i>1997-98</i>	609,065,891	126,183,565	20.72%
<i>1998-99</i>	626,640,112	127,036,841	20.27%
<i>1999-00</i>	642,126,461	130,810,472	20.37%

* The UPRM Budget as a percent of the UPR System General Funds Budget

The UPRM consolidated budget increased from \$141 million in 1994-95 to \$184 million in 1999-00, representing an increase of about 31%. However, in "real" or constant dollars, the UPRM consolidated budget increased by only 17% from 1994 to 2000, and during the 1998 and 1999 fiscal years the budget remained the same.¹ Table 2.2.7 shows the sources of income and the budgetary changes that have occurred during this time period. Despite the increase in the UPRM budget, the institution's economic responsibilities, commitments, and expenditures have increased significantly. Further, the UPRM has experienced a significant reduction in some parts of its budget. For example, with the system-wide (government-wide) program on early retirement, the positions occupied by personnel who retired early were frozen and the funds were returned to the UPR Central Administration resulting in a loss of over \$5.3 million in this five-year period.

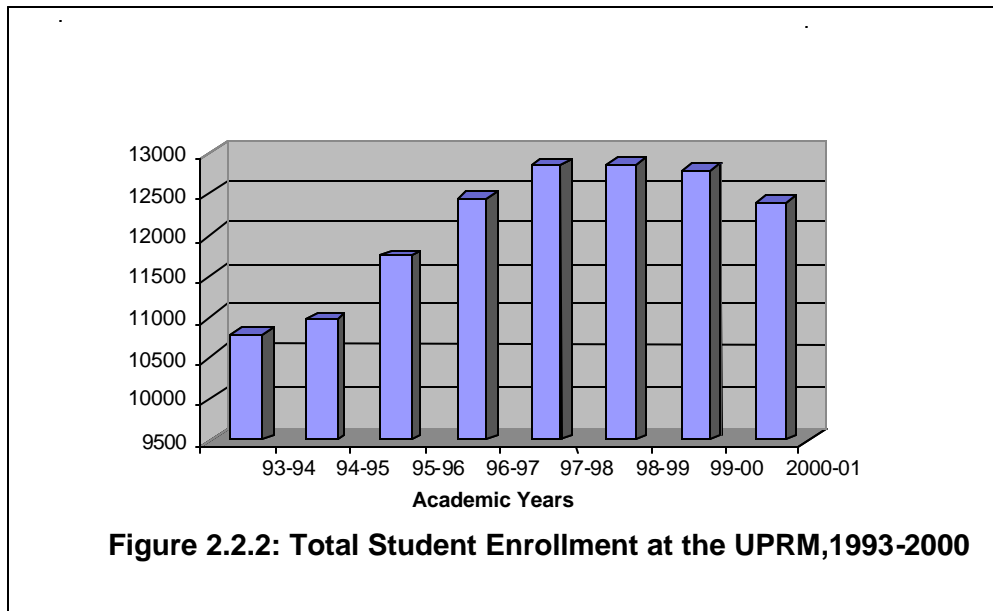
¹ It is important to note that in constant, 1994 dollars, the UPRM's consolidated budget increased from \$141 million in 1994-95; \$156 million in 1995-96; \$159 million in 1996-97; and \$164 million in 1997-98. The consolidated budget for the UPRM remained the same during the 1998-99 and 1999-2000 fiscal years, approximately \$166 million.

Table 2.2.7: UPRM Consolidated Budget for Operational Costs, Fiscal Years, 1995-2000

Funding Sources	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00
<i>UPR Gen. Funds</i>	\$84,960,459	\$95,264,345	\$117,067,495	\$126,183,565	\$127,036,841	\$130,810,472
<i>External Sources</i>						
<i>Fed. Government</i>	32,301,333	40,026,679	39,312,066	38,611,794	46,326,612	40,653,314
<i>State Government</i>	19,413,394	17,698,864	2,959,832	4,093,346	1,998,615	3,872,064
<i>Private Agencies</i>	3,073,496	4,021,636	4,072,626	3,086,510	3,182,654	5,240,128
<i>Self-Generated Inc</i>	1,075,134	4,577,495	5,613,016	5,332,712	3,727,910	3,851,185
<i>Other</i>	204,524					
TOTAL	\$141,028,340	\$161,589,019	\$169,025,035	\$177,307,927	\$182,272,636	\$184,427,163

*Starting in 1996-97 the general operational budget of the Agricultural Experiment Stations and the Agricultural Extension Service Offices were included in the University of Puerto Rico General Funds. Prior to this the budget pertaining to these agencies was included in external sources under the State Government source.

The UPRM has also had to absorb a significant portion of the costs associated with an increase in the Christmas bonus for university employees, an increase in the employer's contribution to the employee health care package, promotions, and salary increases. This has resulted in a reduction of the economies generated by the UPRM, which were used to fund institutional projects aimed at improving our infrastructure and services. Furthermore, during the past five years, the UPRM has experienced a significant growth in the number of students enrolled at our institution. Figure 2.2.2 shows that, in the 1993-94 academic year, approximately 10,800 students were enrolled. This figure increased to 10,967 in 1994-95; 11,736 in 1995-96; 12,426 in 1996-97; 12,846 in 1997-98; 12,883 in 1998-99; finally reaching 12,794 students in the 1999-2000 academic year. These changes represent an increase of 18.5% in the total student population from 1993 to 2000. This is an unprecedented growth which has important implications regarding the UPRM budget, its utilization and distribution, and available resources.



2.3 INSTITUTIONAL EFFECTIVENESS

This section focuses on the institutional effectiveness of the UPRM during the past five years (1995-2000) by examining five critical areas:

1. Graduation: focuses on the graduation rates at the UPRM during a five-year period.
2. Retention: examines the effectiveness of the institution in retaining the students that enter the UPRM.
3. Time to degree: determines the average number of years that students take to complete their degrees.
4. Graduate projections: provides a series of projections regarding the graduation rates expected at the UPRM from 2000 to 2005.
5. Alumni Survey: provides a general overview of the UPRM alumni based on the findings of a survey conducted during the 1998-99 academic year.

2.3.1 GRADUATION RATES FOR FIVE-YEAR PROGRAMS AND FOUR-YEAR PROGRAMS

This section examines the graduation rates for undergraduate students in five-year academic programs. The five-year graduation analysis corresponds to the CE, which currently has academic programs that have been designed to be completed in five years. Graduation rates for undergraduate

students in five-year programs at the UPRM, for the 1990-93 entering class, are presented in Figure 2.3.1.

Figure 2.3.1 shows that 67% of the 1990 cohort from the field of engineering graduated within a seven-year period. The graduation rates for the 1991 and 1992 cohorts remained at around 64% but increased to 67% for the 1993 cohort. Although we do not have current graduation rates for five-year programs in institutions of higher education in the United States, we are confident that the UPRM graduation rates for five-year programs are satisfactory. Indeed the rates for students in four-year programs are significantly lower (see below). However, the CE is committed to increasing its graduation rates while maintaining the academic excellence that has characterized its programs.

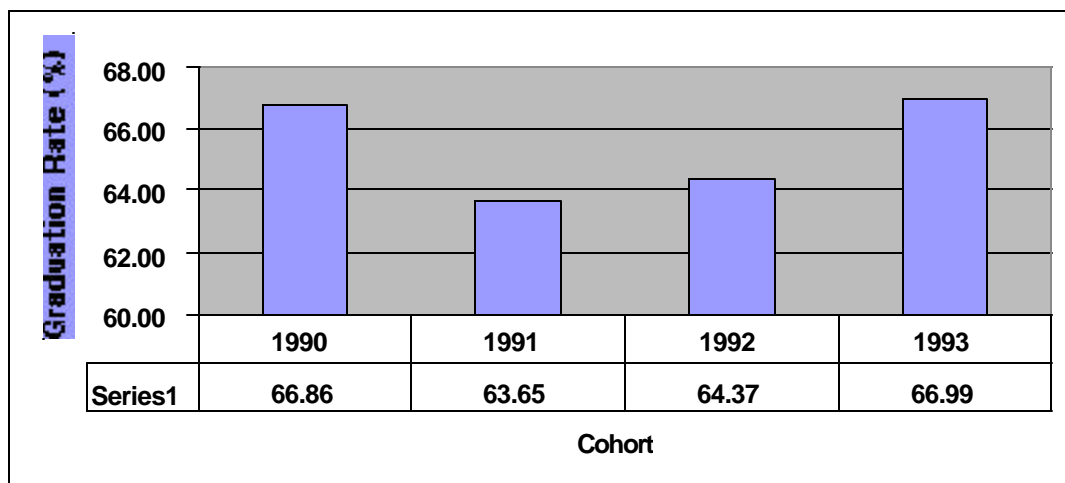


Figure 2.3.1: Graduation Rates, Undergraduate Students, Five-Year Programs, UPRM, 1990-1993

We also examined the graduation rates for undergraduate students in four-year programs at the UPRM. The graduation rates were obtained for those who entered the UPRM from 1990 through 1994 and graduated within a six-year period; this allows us to provide reliable estimates of our graduation rates. As Figure 2.3.2 shows, the graduation rates for the 1990 and 1991 cohorts were around 47%. However, these rates increased to 50.4% for the 1992 cohort, to 53.5% for 1993, and 56.7% for 1994. Clearly, the UPRM has experienced a significant increase in its graduation rates for undergraduate students in four-year programs from 1990 to 1994.

At the end of six years the graduation rate for the 1994 entering freshmen at the UPRM was 56.7%. According to the 1998-99 Report of the Consortium for Student Retention Data Exchange (CSRDE), the graduation rates of the 1990-92 first-time freshmen cohorts, among the 269 institutions in the United States that participated in the survey, was 54% within a six-year period. Our analysis of the CSRDE shows that the UPRM is slightly above the national average graduation rates (See Appendix J).

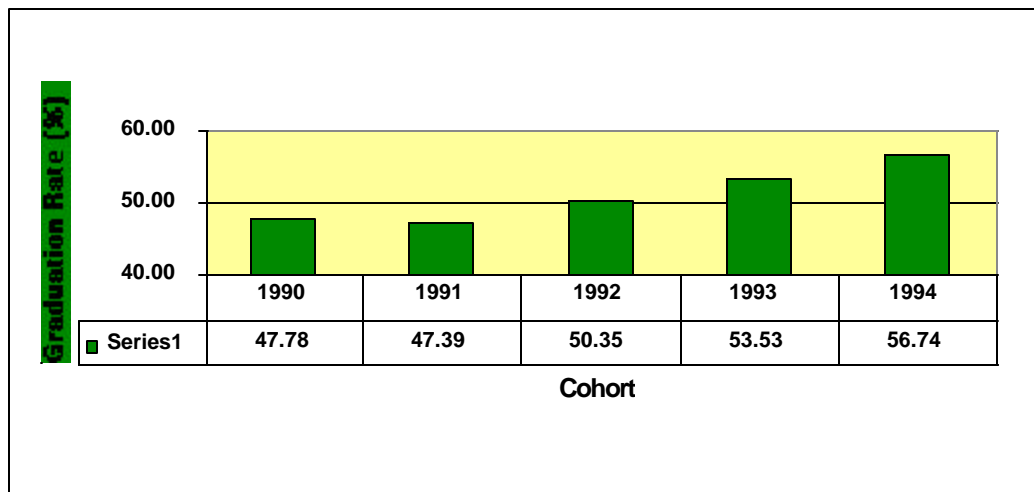


Figure 2.3.2: Graduation rates, Undergraduate Students, Four-Year Programs, UPRM, 1990-94

2.3.2 RETENTION ANALYSIS

An institution's ability to retain and graduate its students is an important measure of institutional effectiveness. In order to provide information on UPRM's effectiveness in this area, we performed a retention analysis for first-time degree-seeking freshmen enrolled in our campus between 1992 and 1997. The retention rates were generated by gender and for a period of three years to determine attrition after years one, two, and three. Table 2.3.1 shows the retention rates for undergraduate students from 1992 to 1997.

According to the 1998-99 CSRDE Report, "Freshman year is the most crucial period in student retention." The CSRDE report shows that about 41% of undergraduate students dropped out of college over a six-year period. During the freshman year, 21% of the students dropped out of

college. However, Table 2.3.1 shows that, in 1992, 89.7% of the UPRM undergraduate students remained enrolled after completing their first year for an attrition rate of only 10.3%. In 1997, the retention rate during the first year had increased to 91.8%. During this year, the retention rate at two years was 82% and decreased to 71% at year three. We should note that there are no significant differences in retention rates according to gender in years one and two. However, the retention rates for females are significantly higher than for males in year three, from 1992 to 1997. That is, at year three women have lower attrition rates than their male counterparts. Although our retention statistics compare very favorably to institutions of higher education in the United States, we should note that the retention rates, at year three, decreased from 79% in 1994 to 71% in 1997. The reduction in the retention rates after year three, since 1994, could be significantly related to the changes in the admission criteria that occurred at the UPR starting in 1995.

Table 2.3.1: Retention Rates for Undergraduate Students at UPRM, by Gender, 1992-97

1992

Cohort Enrollment		Retention at 1 year		Retention at 2 years		Retention at 3 years	
		Total	%	Total	%	Total	%
<i>Female</i>	1065	961	90.23	883	82.91	828	77.75
<i>Male</i>	1127	1006	89.26	902	80.04	820	72.76
<i>Total</i>	2192	1967	89.74	1785	81.43	1648	75.18

1993

Cohort Enrollment		Retention at 1 year		Retention at 2 years		Retention at 3 years	
		Total	%	Total	%	Total	%
<i>Female</i>	1009	939	93.06	888	88.01	827	81.96
<i>Male</i>	994	895	90.04	812	81.69	745	74.95
<i>Total</i>	2003	1834	91.56	1700	84.87	1572	78.48

1994

Cohort Enrollment		Retention at 1 year		Retention at 2 years		Retention at 3 years	
		Total	%	Total	%	Total	%
<i>Female</i>	998	944	94.59	861	86.27	799	80.06
<i>Male</i>	1022	940	91.98	860	84.15	790	77.30
<i>Total</i>	2020	1884	93.27	1721	85.20	1589	78.66

1995

Cohort Enrollment		Retention at 1 year		Retention at 2 years		Retention at 3 years	
		Total	%	Total	%	Total	%
<i>Female</i>	1281	1184	92.43	1095	85.48	1010	78.84
<i>Male</i>	1149	1061	92.34	976	84.94	896	77.98
<i>Total</i>	2430	2245	92.39	2071	85.23	1906	78.44

1996

Cohort Enrollment		Retention at 1 year		Retention at 2 years		Retention at 3 years	
		Total	%	Total	%	Total	%
<i>Female</i>	1359	1255	92.35	1155	84.99	1060	78.00
<i>Male</i>	1268	1175	92.67	1038	81.86	938	73.97
<i>Total</i>	2627	2430	92.50	2193	83.48	1998	76.06

1997

Cohort Enrollment		Retention at 1 year		Retention at 2 years		Retention at 3 years	
		Total	%	Total	%	Total	%
<i>Female</i>	1211	1110	91.66	991	81.83	855	73.08
<i>Male</i>	1127	1035	91.84	927	82.25	776	68.86
<i>Total</i>	2338	2145	91.75	1918	82.04	1661	71.04

2.3.3.TIME-TO-GRADUATE OF FIRST-TIME DEGREE-SEEKING STUDENTS

This section discusses information regarding the time-to-degree for students enrolled at the UPRM, from 1991 to 1995, and that graduated from four-year and five-year programs. Table 2.3.2 shows the time-to-degree for students that were enrolled in four-year programs from 1991 to 1995. The data show that there is a very small percentage of students who actually graduate in four years. For example, in 1991, only 6.8% of the students enrolled in four-year programs actually graduated in this period of time. However, this figure increased to 8.4% in 1992, 12.7% in 1993, and 14.8% in 1994 but reduced to 10.1% in 1995. The percentage of students completing a four-year program in five years has remained fairly stable ranging from 27% to 30%. It is noteworthy that the percent of students completing their degrees within five years has increased from 34.8% in 1991, to 38.2% in 1992, to 42.4% in 1993, to 45.3% in 1994.

Table 2.3.3 shows the time-to-degree for undergraduate students at the UPRM graduating from five-year degree programs from 1991 to 1995. In 1991, approximately 20% of these students graduated in five years, and this figure has remained fairly stable throughout these years. The percentage of students requiring six years to complete a five-year program has ranged around 30% while it took about 11% to 13% of the students, from 1991 to 1993, seven years to complete their programs. We should also note that the percent of students completing their programs within six years increased from approximately 52% in 1991 to 56% in 1993.

Although we have experienced some improvements in the time-to-degree among undergraduate students at the UPRM, the number of years that it takes to complete a degree is an

issue of great concern and merits our immediate attention. An extended amount of time required to complete the degree beyond the four or five years established by the program has serious implications for the growth and development of our institution, it significantly impacts our fiscal and financial operations, and it has a non-trivial impact on the professional development and employment opportunities of our undergraduate students. However, the 1998-99 CSRDE Report indicates that the length of time that a student takes to complete a degree has continued to increase in the United States. Only 27% of the 1990-92 entering freshmen completed their degrees within a four-year period. The UPRM is, nevertheless, at a clear disadvantage in this aspect when compared to its mainland counterparts. The UPRM needs to carryout an in-depth study to determine which factors account for the prolonged time to degree among its undergraduate students.

Table 2.3.2 : Time to Degree: UPRM Undergraduate Students, Four-Year Degree Programs, 1991-1995

Cohort	1991		1992		1993		1994		1995	
Entering Students	1359		1446		1276		1246		1567	
<i>Years</i>	<i>Graduates</i>	<i>%</i>	<i>Graduates</i>	<i>%</i>	<i>Graduates</i>	<i>%</i>	<i>Graduates</i>	<i>%</i>	<i>Graduates</i>	<i>%</i>
3									1	0.06
4	92	6.77	122	8.44	162	12.70	185	14.85	158	10.08
5	381	28.04	430	29.74	379	29.70	379	30.42	427	27.25
6	171	12.58	176	12.17	142	11.13	143	11.48	36*	2.30
>6	115	8.46	113	7.81	74	5.80	8	0.64		
Still Enrolled							108	8.67	364	23.23

* Expected to graduate, can be higher or lower

Table 2.3.3: Time to Degree: UPRM Undergraduate Students, Five -Year Degree Programs, 1991-1995

Cohort	1991		1992		1993		1994		1995	
Entering Students	685		741		718		765		849	
<i>Years</i>	<i>Graduates</i>	<i>%</i>	<i>Graduates</i>	<i>%</i>	<i>Graduates</i>	<i>%</i>	<i>Graduates</i>	<i>%</i>	<i>Graduates</i>	<i>%</i>
4	1	0.15	1	0.13	2	0.28	2	.26	2	0.24
5	135	19.71	160	21.59	164	22.84	173	22.61	176	20.73
6	218	31.82	221	29.82	236	32.87	231	30.20	28*	3.30
7	82	11.97	95	12.82	79	11.00	26*	3.40		
>7	59	8.61	52	7.02	22	3.06				
Still Enrolled							131	17.12	435	51.24

* Expected to graduate, can be higher or lower

2.3.4 GRADUATION PROJECTIONS

The graduation projections for the UPRM were generated using the extrapolation method based on the average annual rate of linear growth in graduation trends between the 1994-1995 (Time 1) and 1999-2000 (Time 2) academic years:

- Average Annual Rate of Linear Growth (r_{lin}) =

$$[(\text{Population at Time 2} - \text{Population at Time 1}) / \text{Population at Time 1}] / n$$
 where n = number of years between the two populations
 where Population in target year = Population in Base Year $\times (1 + r_{lin} n)$

Tables 2.3.4, 2.3.5, and 2.3.6 show the graduation projections for the UPRM at the undergraduate and graduate levels and for each academic college from 2001 to 2005. As Table 2.3.4 shows, given the increase in the number of degrees awarded from 1995 to 2000, we are projecting a slight annual increase in the number of undergraduate degrees to be awarded from 2001 to 2005. For example, we are projecting that the number of undergraduate degrees conferred will increase from 1,737 in 2001 to 1,919 in 2005 while the number of graduate degrees will increase from 203 to 261. We should note, however, that the extrapolation method used for these projections does not necessarily take into account all the external factors that may impact the number of degrees to be awarded.

There are several factors that may result in stabilizing or slightly reducing the number of degrees awarded at the undergraduate level at the UPRM. For example, the UPRM has experienced a reduction in the number of entering freshmen (see section on Enrollment Analysis and Projections in Section 4.1). Further, the total enrollment trends have evidenced a decrease since 1998. Moreover, as previously shown in Table 2.3.1, retention rates at the UPRM have experienced a slight reduction from 1995 to 1997. Given these significant changes, the UPRM might experience a slight decline in the number of baccalaureates awarded in the years to come.

On the other hand, the UPRM has generated a number of new graduate programs, some of which are pending approval at different administrative levels. Once these programs are up and running, we may experience an increase in the number of graduate degrees awarded in excess of those presented in the graduation projections.

Table 2.3.4: Baccalaureate Degrees Awarded and Graduation Projections, 1995-2005

Baccalaureate Degrees Awarded		Graduate Degrees Awarded		Total Degrees Awarded	
<i>Degrees in 1995</i>	1,465	<i>Degrees in 1995</i>	115	<i>Degrees in 1995</i>	1,580
<i>Degrees in 2000</i>	1,692	<i>Degrees in 2000</i>	188	<i>Degrees in 2000</i>	1,880
$r_{lin} = .031$		$r_{lin} = .127$		$r_{lin} = .038$	
Projections:		Projections:		Projections:	
2001	1,737	2001	203	2001	1,940
2002	1,783	2002	217	2002	2,000
2003	1,828	2003	232	2003	2,060
2004	1,874	2004	246	2004	2,120
2005	1,919	2005	261	2005	2,180

Table 2.3.5: Undergraduate Graduation Projections by Academic College, UPRM, 2001-2005

	<i>Engineering</i>	<i>Agricultural Sciences</i>	<i>Sciences</i>	<i>Arts</i>	<i>Business Adm.</i>
Projections	$r_{lin} = .013$	$r_{lin} = .067$	$r_{lin} = .052$	$r_{lin} = .048$	$r_{lin} = .023$
2001	654	117	415	251	300
2002	662	122	432	261	306
2003	670	128	448	270	312
2004	678	133	465	280	318
2005	686	139	481	289	324

Table 2.3.6: Graduation Projections, Graduate Programs, by Academic College, UPRM, 2001-2005

	<i>Engineering</i>	<i>Agricultural Sciences</i>	<i>Arts & Sciences</i>	<i>Business Adm.</i>
Projections	$r_{lin} = .160$	$r_{lin} = .055$	$r_{lin} = .132$	$r_{lin} = .143$
2001	69	29	79	26
2002	74	30	85	28
2003	80	32	90	30
2004	85	33	96	32
2005	91	34	102	34

2.3.5 ALUMNI SURVEY

During the 1998-1999 academic year, we generated a database which included the current mailing addresses of 4,000 UPRM alumni. A random sample, proportionate to the size of the academic departments at the UPRM, of 1,100 addresses was selected and an Alumni Survey (see Appendix K) was mailed to these former students. After a four-month period, 263 completed surveys were received in the Office of the Dean of Academic Affairs, a response rate of 23.9%. Given the low response rates, we cannot conclude that this is a representative sample of the UPRM alumni. Nevertheless, this section provides a general profile of these respondents and the institutional effectiveness of the UPRM in the professional development of its alumni, according to their responses and perspectives.

Of the 263 alumni that responded to our survey, 47.9% were female and 52.1% males. Fourteen percent of those responding graduated from the CAgS, 35.4% from the CE, 30.8% from the CAS, and 19.8% from the CBA. A total of 46 academic programs from 28 departments from the four academic colleges were represented in the sample.

The alumni that formed part of our study were admitted into the UPRM between 1948 and 1993 and graduated between 1952 and 1999. Of the individuals that never interrupted their studies at the UPRM and graduated from four-year programs, the average number of years to obtain their degree was 5.27 years, while the average time required to obtain a degree from a five-year program was 5.69 years. As Figure 2.3.3 shows, approximately 38% of the alumni graduated with a grade point average (GPA) greater than 3.00, on a 4.00 scale, and 51% had a GPA between 2.50 and 2.99.

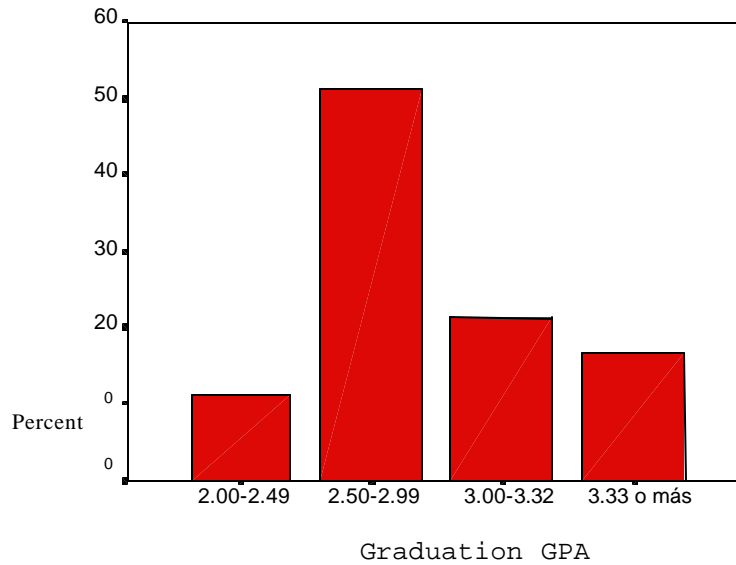


Figure 2.3.3: Grade Point Average of Individuals Responding to the 1998-99 UPRM Alumni Survey

Approximately 50% of the alumni surveyed pursued graduate studies after obtaining their baccalaureate, of which nearly 80% had completed, or were completing at the time of the survey, a master's or a doctoral degree. We should note that 79% of the alumni that responded to our survey indicated that the skills acquired at the UPRM were "very good" or "excellent" foundations, which allowed them to continue graduate studies (see Figure 2.3.4).

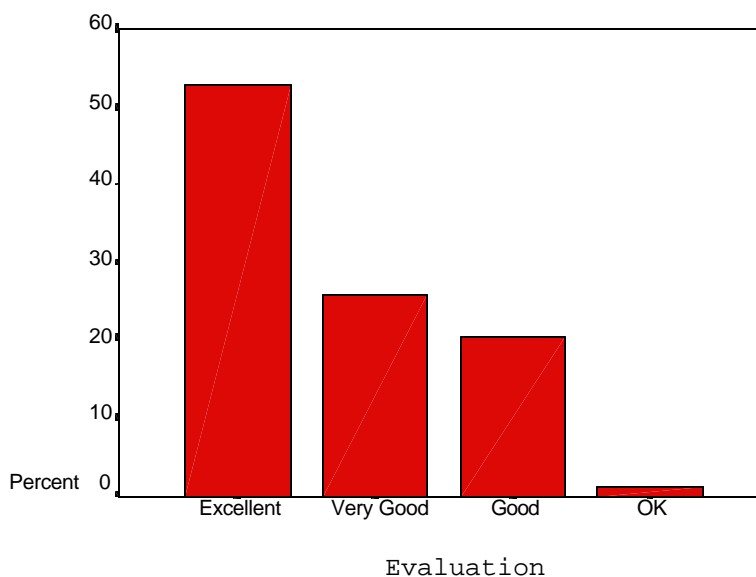


Figure 2.3.4: Alumni Evaluation of Skills Acquired at UPRM as a Foundation for Pursuing Graduate Studies

Of the 132 (50.2%) alumni that did not pursue graduate studies, 57% indicated that they obtained a full-time job after graduating from our institution. Nearly 77% of those that obtained a full-time job responded that they obtained their job within six-months after graduation. When asked how they would rate the skills acquired at the UPRM in order to compete in the job market, approximately 75% responded that they were either "excellent" or "very good."

Of those currently employed, about 70% indicated that they were working full-time. Of the full-time employees, approximately 61% indicated that they had an average annual gross income of \$ 33,000.00. Of those indicating that they were unemployed (7.2%), 33.3% responded that they were full-time students, and nearly 40% were householders.

Given the data and the analysis generated to date, we can conclude that the UPRM alumni that responded to our survey are leading successful careers; an overwhelming majority have pursued graduate studies; and they rate the skills and knowledge acquired at the UPRM as "very good" to "excellent."

There is an immediate need to continue obtaining and updating the mailing addresses of our alumni and to continue to conduct surveys on a regular basis. Additional and follow-up studies will allow us to assess the UPRM institutional effectiveness and to keep track of the professional growth and development of our alumni.

3 Institutional Responses to the MSA 1995 Recommendations

In 1995, the MSA Evaluation Team for the Commission on Higher Education recommended the reaffirmation of the accreditation of our institution and provided a series of commendations and very important recommendations. They commended the candid and comprehensive assessment that the institution provided in the report regarding the current state of affairs at the UPRM at that time and the support provided by the administration. The MSA Evaluation Team identified general administrative concerns in terms of delays in procurement, low efficiency in information systems, lack of training programs for administrative personnel, and other issues specific to different colleges and administrative offices. However, the Evaluation Team indicated that "concerns regarding island politics, decentralization and the proper role of the Board, the Central administration and the campus administration in the managing of the university far outweigh other concerns." The following sections include the UPRM actions and responses to the recommendations made by the MSA in 1995.

3.1 GOVERNANCE AND ADMINISTRATION

3.1.1 GOVERNANCE

The MSA Evaluation Team made three interrelated recommendations regarding governance, administration, and planning. The evaluation team indicated "the University of Puerto Rico at Mayagüez has had six chancellors in the past ten years (1984-1994) and similar changes in other administrative officers is, if nothing else, inimical to long-range planning, administrative effectiveness and campus morale."

MSA RECOMMENDATIONS:

"We believe that the entire public system of higher education together with the help of enlightened legislators must work to secure for higher education on the island the autonomy necessary to insulate it from political changes on the island."

"There must be a proper balance between the overseeing functions of the Central Administration, and the local decisions that must be made by those who are closest to and who must manage the campus on a day to day basis"
"A proper balance is needed between the powers of the Board of Trustees, the president of the university , the chancellors, and the concept of the campus autonomy."

UPRM RESPONSE:

Our institution continues to be affected by a general lack of institutional autonomy and by administrative instability. The academic community believes that one of the primary institutional problems in this regard is the intervention of politics and politicians in the university decision-making process and the Central Administration's micromanagement of the institution's affairs. During the 1995-96 to 2000-2001 academic years, the UPRM has had six chancellors with the corresponding changes in the main administrative officers, from Deans to department chairs. These short-term administrations faced many difficulties, but probably the main ones stem from the way the administrators were appointed, without adequate implementation of the consulting processes, as it is outlined in the UPR General Regulations, with political intervention, and excessive control from the Board of Trustees and the Central Administration. In the majority of the cases, the recommendations made by the university community, including the Academic Senate, were basically ignored by the UPR Board of Trustees.

However, our campus has been extremely active in the process of advocating changes in the legislation that regulates public education in Puerto Rico. In 1997, members of our Academic Senate initiated a public campaign (with mailings and press releases) in an attempt to convince the Legislators of the Commonwealth of Puerto Rico of the need to complete the development of a new law and a university reform.

Under the leadership of Senators from the UPRM representatives from the different Academic Senates on the UPR University Board and the faculty representatives on the Board of Trustees decided on December 8, 1999 to present to the entire academic community the need to transform our working conditions as members and employees of the UPR. It was agreed that we

would present to the corresponding university authorities and to the Legislature of Puerto Rico a university reform project that would involve an extensive revision of the UPR Law. A Commission was established that included representation from different university sectors (e.g., students, faculty, and employees). This Commission worked on university reform to ensure widespread participation of the academic community, focus on greater fiscal autonomy for all the units within the UPR System, respect academic freedom, develop a democratic university system and advocate the decentralization of the UPR.

This Commission—called the "*Comisión para la Iniciativa de Afirmación Universitaria*"—included representatives from all the university sectors, including the Board of Trustees (faculty and student representatives), the Academic Senates, National Student Board, General Student Councils throughout the entire system, faculty associations, and representatives from the diverse set of employee unions and associations. The Commission developed a university reform proposal which was widely distributed and discussed throughout the entire system. The various Academic Senates discussed and endorsed this proposal in their general meetings. Therefore, this university reform project was a result of widespread participation and has the endorsement of the UPR academic community.

After the general election in Puerto Rico in November 2000, the Commission for Education, Science, and Culture of the Legislature of Puerto Rico started its own process to reform the the UPR Law. This Commission held a series of public hearings to receive feedback from the university community and the Puerto Rican society. The government Commission and the university Commission collaborated to ensure that the reform of the UPR Law was a result of the participation of the academic community. Consequently, both Commissions organized a series of public hearings that would take place at the different institutions within the UPR to ensure the participation of students, faculty, and university employees. The university Commission, after consulting and receiving the feedback and endorsement of the academic community, will submit to the government Commission a proposal with a series of recommendations to generate a more democratic, participatory, and autonomous university system.

Our academic community has been quite active in this university reform project. Faculty, students, and administrative personnel from the UPRM have participated in public hearings sponsored by the Legislature to voice their opinions and to make recommendations about the new university Law. A new University Law may be in place by 2002 and all units within the UPR system will have more decision-making power, become more autonomous, have less political interference in administrative appointments, and encourage the active participation of students, faculty, and employees in all phases of university life.

3.1.2 ADMINISTRATIVE SERVICES

The MSA Evaluation Team made several recommendations regarding the improvement of administrative services at the UPRM.

MSA RECOMMENDATION:

"In general we recommend that the leaders of the University promote empowerment of persons at all levels and a shared sense of ownership of the University. "

UPRM RESPONSE:

In 1996, an institutional committee was constituted with the sole purpose of implementing a new approach to university administration based on Total Quality Management (TQM). An Industrial Engineer was appointed as director of the team and TQM was perceived as an alternative to promote involvement and empowerment of the university community. The TQM Office continued its work until August 1999. There is no data available to evaluate if the TQM program had any impact to promote empowerment and sense of ownership.

MSA RECOMMENDATION:

"We recommend that efforts be continued by the administration to make purchasing an effective, customer- focused organization. It is imperative that purchasing come to be perceived as effective."

UPRM RESPONSE:

One of the studies performed by the institutional TQM Office evaluated the services provided by the UPRM Purchasing Office. At the same time, the UPR Central Administration

implemented a project designed to evaluate the institutions purchasing operations. This project was called "Purchasing Office Re-engineering." As a result of these initiatives, the areas of the purchasing process that required improvements were identified and new procedures were designed and implemented. In recent years, administrators at all levels have received training and now participate more effectively in the purchasing process. It is also important to note that a purchasing system has been developed at the R&D Center which handles a significant amount of the purchasing related to research. The R&D Center and the services it offers are highly regarded by our researchers for its efficiency and effectiveness.

MSA RECOMMENDATION:

"The Self-Study states that there is a need for the development of an effective training program for new administrators and managers and we agree. There is also a need for the development of an effective performance appraisal system with rewards for the improvement of performance"

UPRM RESPONSE:

In 1999, the UPRM Personnel Department developed a training program for administrative employees. This program was a result of an assessment project focusing on administrative training needs, as indicated by administrators and administrative personnel. Overall, the most critical training areas identified was in the development of computer software and technical skills. As a result, 400 employees have already been trained in these areas. Also, a series of workshops was developed for administrators and managers in areas such as developing leadership skills, parliamentary procedures, and the tenure and promotion process. Finally, the Fifth Workshop for Academic Planning was conducted on August 10-11, 1999. All faculty members in administrative positions, from all the UPR campuses were invited to this workshop. Among the topics discussed were use of the Internet, activities and functions of the Office of Academic Affairs, distance education, searching for external funds, institutional research, and findings concerning newly enrolled students. The workshop was aimed at maintaining an up-to-date Strategic Plan for the University of Puerto Rico and all of its units.

MSA RECOMMENDATION:

"In the auxiliary enterprises area, generally a money-making proposition for most universities, UPRM is losing significant sums of money_We recommend that a way be found to better manage these enterprises, that subsidies be eliminated in the running of auxiliary enterprises, and that by better management auxiliary enterprises be made to generate revenue to be used to meet the academic, administrative and student needs of the university."

UPRM RESPONSE:

The four main auxiliary enterprises at the UPRM are the campus bookstore, the Darlington apartment building, the university hotel, and the cafeteria. The administration and structure of these enterprises has experienced significant changes, particularly the cafeteria.

An independent concessionaire is operating the campus cafeteria. Important changes and modifications have been made to these facilities such as the acquisition of new kitchen equipment and new tables and chairs, air conditioning units have been installed, and a fully-equipped pastry shop and ice cream parlor were added. Additionally, a power generator capable of supplying power for the full operation of the cafeteria has been purchased and installed. All of the above equipment will remain as property of the UPRM upon termination of the actual contract in 2006. The electricity subsidy was eliminated and the rent was increased to \$1800.00.

A restructuring process was initiated in the bookstore to facilitate the acquisition of textbooks and supplies and to control or reduce financial losses. With additional programmatic and administrative changes and adequate planning, the bookstore will become a competitive and financially profitable investment. Services rendered by the bookstore have improved and sales have increased. However, the bookstore and the Darlington still receive financial subsidies.

MSA RECOMMENDATION:

"Our observations have also shown that maintenance has been hampered by insufficient resources and that major maintenance and deferred maintenance need to be funded as priority items beyond the levels currently included in the budget"

UPRM RESPONSE:

Although the UPRM is committed to initiating an intensive and pro-active preventive maintenance plan, funding limitations continue to be a serious problem.

MSA RECOMMENDATION:

"In terms of facilities, we recognize that parking is one of the serious problems faced by the campus and that it must continue to be addressed and new solutions proposed"

UPRM RESPONSE:

We recognize that parking space on campus continues to be limited, particularly if it is evaluated in proportion with the amount of students, faculty, and administrative personnel. Parking limitations continue to be one of the primary problems reported by the university community at large. To address this issue, mechanical arms are being installed in parking areas designated for faculty and staff permits to control the access of unauthorized vehicles. Table 3.1.1 shows the updated number of parking permits issued, as well as the amount of parking spaces available in 1994 and in 2001.

The parking spaces at the *Palacio de Recreacion* and the Mayagüez Zoo belong to the Mayagüez municipality and are being used by members of the academic community and the general community through an agreement between the municipality of Mayagüez and the UPRM. Without the spaces in these two areas, the actual number of parking spaces available on campus is 3979, which represents an increase of 586 spaces between 1994 until 2001.

Table 3.1.1: Parking Spaces Available / Parking Permits Issued, UPRM, 1994 and 2001

Type of Permit	Parking Spaces		Parking Permits	
	1994	2001	1994	2001
White (Upper level students)	1,522	2,254	5,988	2,732
Orange (1 st year students)	930	**	967	**
Violet (Administration)	531	846	1,298	3,000
Green (Faculty)	394	485	1,510	1,390
Blue (Residents)	16	7	8	7
Ambulance	0	2	0	Not required
Handicapped	0	35	0	Not required
Palacio de Recreación	0	480	0	Not required
Imprenta	0	350	0	Incl. White Permits
Mayaguez Zoo	0	109	0	109
TOTAL	3,393	4,568	9,771	7,238

** Orange permits are no longer issued. First and second year students have parking spaces available to them at the *Palacio de Recreación* and the Zoo. Transportation is also available to access the main Campus.

The parking spaces in the *Palacio* and the Mayaguez Zoo added 589 spaces, which are available to the university community. However, there is still a deficiency of 2,670 parking spaces when compared to the number of permits issued in 2001 an of about 3,200 spaces if the parking lots at the zoo and the *Palacio* are not available.

Despite these improvements, the lack of parking spaces continues to be a problem. Efforts towards solving this problem continue to be related to the possibility of constructing a multiple-story parking building. The lack of financial resources, other budgetary priorities, and environmental concerns have prevented us from solving this difficult situation. Nevertheless, significant improvements have been made to alleviate the critical parking situation.

Another issue, related to the lack of parking spaces at the UPRM, was the MSA's concern regarding the number of vehicles being parked on the sidewalks and curves. To alleviate this problem

and to provide additional security measures for our pedestrians, many areas throughout campus were designated "critical areas" and identified with red and yellow markings. Anyone parking in the "critical areas" would be fined with a \$100.00 parking violation. Also, noticeable improvements in traffic control have been registered.

MSA RECOMMENDATIONS:

"The student center needs new equipment, furniture, paint, lighting, and other improvement. We don't think that it needs to be rebuilt, but attention must be paid to needed improvements."

UPRM RESPONSE:

Funds have been requested to refurbish the Student Center. However, the Planning Office and the Office of the Dean of Students must coordinate efforts to evaluate and design the changes that the Student Center requires to better serve our student population.

MSA RECOMMENDATIONS:

"Planning activities for the development of computer technology and their availability on campus need to be strengthened. We do know that the campus is aware that the greater use of computer technology will make the university at Mayagüez more effective and efficient, but we recommend increased planning for this technology and for the infrastructure to support it."

UPRM RESPONSE:

As indicated in the Institutional Overview section, important changes in the development of computer technology and infrastructure have occurred at the UPRM in recent years:

- the number of computer laboratories and available computers have increased significantly
- new mainframe computer systems (a Digital Alpha 8250 and a Digital Vax 6610) have been installed in the Computer Center
- as of 1997, the UPRM counts with a renovated fiber optic communication infrastructure, which connects 42 buildings throughout the campus with a central system located in the institution's telephone office building
- wireless remote access ports are being installed throughout the campus to allow wireless access to the Internet using laptop computers
- as a consequence of the improvements in our communications infrastructure, Internet communication at the UPRM has increased exponentially in recent years

- two additional T1 lines have been ordered to improve communication technology
- with the UPRM participation in the Internet 2, our communications system should experience significant improvements in the near future
- agreements have been established with Microsoft to provide software at low-cost to the academic community
- agreements have been established with Hewlett Packard to provide laptop computers to students at reduced costs
- an agreement between the UPRM and the Puerto Rico Telephone Company (PRTC), known as "Smart Park," has been approved to have the latter provide our institution with the telecommunications infrastructure required for our research, technical, and administrative initiatives
- a Multimedia Distance Learning Center is being developed

Although UPRM needs to continue to work on the development of computer technology and that their availability on campus needs to be strengthened, significant improvements have occurred since MSA's accreditation visit in 1995.

3.2 STUDENTS AND STUDENT LIFE

In 1995, the MSA Evaluation Team agreed with our assessment of areas that required improvement and made very valuable recommendations.

MSA RECOMMENDATION:

"Strong efforts should be made to support initiatives to improve student retention rates and accelerate their progression throughout their programs."

UPRM RESPONSE

The Office of the Dean of Students realizes that there is a need to conduct research regarding their services and some pilot testing of their programs. This office a study to guide the contribution of our counselors and improve the retention rates among UPRM students. The research is conducted by researchers in psychology from the Department of Social Sciences. The study began in September 1999 and aims to identify factors associated with the use of and satisfaction with the services students receive from the Guidance and Counseling Office. A preliminary analysis identified

the main reasons why students requested guidance and counseling services at the UPRM, including doubts and concerns about their academic major, academic difficulties with the classes, depression, and anxiety. These factors could be related to retention of students at the UPRM. This study will provide additional information concerning the primary problems that affect our students and how these may impact their retention rates. Further, the Guidance and Counseling Office, the Medical Services Department, and the Office of the Quality of Life are increasing the number of workshops and seminars offered to students in these areas. By identifying, trying to understand, and helping students solve their problems and address their concerns, we expect to favorably impact the retention rates.

The Office of the Dean of Academic Affairs implemented the course UNIV 0003 (Skills for College Success), which is taught by the UPRM counselors and is required for all incoming students. To provide additional services to the student body, tutoring facilities were remodeled and enlarged from six to eleven rooms in 1998.

There is a very high level of collaboration between the academic departments and the Guidance and Counseling Office. Referrals for counseling services from faculty members have increased significantly, especially for psychological and psychometric testing and tutoring services. This shows that faculty are developing a greater concern for student problems and have a better understanding of the services and resources available on campus.

Additional research is needed regarding the impact of the initiatives previously identified and the changing social and demographic characteristics of our students to respond adequately to their needs.

MSA RECOMMENDATION:

"In order to be more effective, some responsibilities the counselors must now attend to, such as admissions and career counseling, may have to be assigned to others".

UPRM RESPONSE

This is still a very important issue at UPRM and it must be addressed as soon as possible. Given the increasing student body, the counselors' workloads have also increased.

MSA RECOMMENDATION:

"The Counseling Department is at present required to spend too much time conducting activities for the recruitment of high school students and their counselors off campus".

UPRM RESPONSE

In 1997, the Counseling Department was designated as a faculty unit. This new status ended a discussion initiated about thirty years earlier and brought a number of important changes particularly in the administrative structure, in the sense of empowerment among counselors, and in the decision-making and planning processes. As a consequence of this restructuring, a Recruitment Division at the Admissions Office was established to relieve counselors and advisors from recruitment activities with high school students.

MSA RECOMMENDATION:

"We would like to observe that students use the facilities provided: athletic programs and student center, among others, and an improved and strong student leadership presence on campus"

UPRM RESPONSE

After several years of not being constituted because of a lack of quorum in their general meetings, the student government was reactivated in 1997-98. Currently, we are witnessing the strengthening of the student body as more than 1,500 students attended the most recent student assembly. Although the UPRM has tried to give the support needed to develop leadership among our students, it has often hampered student activities and efforts by withholding funds. Student leaders have been developing new initiatives to revitalize the student body. This has had significant results in terms of motivating students to participate in general student meetings, to participate in general elections for the Student Council, and to attend other activities. It is unfortunate to note that the resources provided to students and student organizations varies from one administration to

another. We must ensure that students and their corresponding groups and organizations will always have access to the support that they need, regardless of the current administrative leadership.

MSA RECOMMENDATIONS:

"Remodeling of the Student Center"

UPRM RESPONSE:

To partially compensate for the lack of space in the Student Center, the operational hours have been extended on Mondays to Thursdays, from 7am to midnight; on Saturdays, from 9am to 5pm; and on Sundays, from 1pm to 6pm. A plan for the remodeling or restructuring of the student services is not available but, nevertheless, a remodeling is necessary.

MSA RECOMMENDATIONS:

"To set as a priority the implementation of the plans for the new theater and fine arts center"

UPRM RESPONSE

The recently remodeled Ramón Figueroa Chapel Theater is still the primary center for campus activities, particularly those dealing with fine arts. Off campus, the Yagüez Theater and the Mayagüez' Cultural Center are used for theatrical performances and concerts for students and faculty through arrangements made between the Mayor's Office and the UPRM Social and Cultural Activities Department. The Ramon Figueroa Chapel Theater has a capacity for about 450 persons while the Yaguez Theater seats about 2000, and the Mayagüez Cultural Center about 2000. Although the UPRM has these external resources available, a community with about 13,000 students, 800 professors, and even more non-teaching staff needs its own facilities on-campus to encourage the participation of the academic community in cultural activities. The lack of adequate space on-campus deters student and faculty enthusiasm and participation in cultural and artistic presentations at the UPRM. In this sense, the general cultural formation and quality of university life among the university population is impaired. We should note, however, that the UPRM master plan includes building a new theater.

MSA RECOMMENDATIONS:

"To establish concrete, permanent addresses for recent graduates, to develop island chapters of the UPR – Mayagüez in different cities across the island and to identify alumni who are parents of students currently enrolled; in order establish communication with the UPRM."

UPRM RESPONSE

Our institution must allocate the necessary resources to develop an aggressive work plan to identify the mailing addresses and develop a profile of the approximately 40,000 UPRM alumni. An up-to-date database, which includes socio-economic and demographic information on this group, is desperately needed. Follow-up surveys are needed to actualize our records on our alumni. Further, the UPRM Alumni Association needs to be strengthened. Many alumni activities are organized by groups of alumni of specific departments, programs, and classes.

Activities sponsored by the Alumni Association, such as the Annual Homecoming, have only limited participation. The Alumni Association is not an important economic resource for the UPRM. The use of modern communication methods, (e.g., Internet and e-mail), public campaigns, massive mailings, social networks; and current and former UPRM faculty members are valuable resources that can be utilized to identify and recruit alumni and strengthen the association.

MSA RECOMMENDATIONS:

"Attention must be paid to the special needs of married students as housing and day-care facilities"

UPRM RESPONSE:

The institution needs to develop a mechanism to continuously identify and assess the marital status of our student population and their needs. However, UPRM has initiated efforts to meet the needs of married students on-campus. For example, these students may receive orientation and counseling services, and they are referred to the corresponding government agencies if they need subsidized housing and/or other social services.

Since 1996, the UPRM has been part of the Child Care Program Network for students at the UPR. This office provides assistance to students with children and partially subsidizes child-care

costs for approximately 60 students per year. Although the UPRM recently inaugurated the Pre-School Development Center for the children of faculty and employees, these facilities will be accessible to the UPRM study body with children in the near future.

MSA RECOMMENDATIONS:

"Health Services were offered on a limited services hours schedule and students expressed a low level satisfaction with medical consultations, waiting periods and health plan referrals"

UPRM RESPONSE:

As mentioned in the Institutional Overview section, the Department of Health Services offers primary care health care, free of charge, to all its students. Some of the services provided include medical consultation, dental care, emergency and short stay recuperation care, ambulance services, clinical laboratory tests, health education programs, and coordination and referrals to off-campus health providers for students under the university health insurance plan or personal health insurance plan. The services are classified in two areas: preventive medicine and therapeutic medicine.

The UPRM has continued to expand its services and hours of operations to meet the demands of a growing and diversified student body. The Health Services Office was reorganized, following an evaluation by the TQM Office. Following this reorganization there was a reduction in the waiting time to see a health practitioner. Furthermore, in February 2000, the Department of Health Services extended its service hours. All students are required to have a health insurance plan which guarantees the coverage of medical services, especially emergency services, throughout the island.

3.2.1 CURRENT CRITICAL CONCERNS

In the following section, the Office of the Dean of Students has identified its primary concerns which impact the administration and the service that it offers to the university community:

1. Continuous administrative changes have affected the development of projects and the long- and short-term strategic planning.
2. A reduction in the operational budget during the last four years has had an adverse effect on their administrative operations and in the diversity of services rendered..

- The operational budget and the number of personnel assigned to the Office of the Dean of Students needs to be increased.
3. Physical facilities for student organizations, study areas, counseling, and the Financial and Placement offices should be remodeled.
 4. Adequate on-campus facilities should be built to allow for the development of socio-cultural activities. The budget assignment for these activities must be revised.
 5. Additional maintenance personnel must be identified and trained to comply with local and federal regulations.
 6. Limited office space, scarce secretarial and duplication services, and inadequate study areas hamper student organizations.
 7. The Financial Aid Office must be temporarily relocated while the facilities are being remodeled.
 8. The accreditation standards for University and College Counseling Centers, used by the International Association of Counseling Services, Inc., recommends to maintain minimum staffing ratios in the range of one full time professional staff member to every 1,000 to 1,500 students, depending on services offered and others campus agencies available to serve students. The UPRM needs to take immediate action to comply with these standards.
 9. Maintenance issues continue to be a problem.
 10. The Alumni Office has been unable to accomplish its mission and objectives. Since 1995, it has had at least five directors. This situation and the lack of a concrete work plan has had a detrimental impact on the effectiveness of this organization.

3.3 OUTREACH

In 1995 the MSA Evaluation Team identified the outreach programs and services as one of the strengths of our institution and commended its diversity and achievements. In fact, UPRM commitment to the community is an integral part of its mission. We have seen significant increases in the diversity and achievements of our outreach services during the last five years. The following section identifies the recommendations made by MSA, gives the UPRM response, and briefly summarizes the outreach services and programs.

MSA RECOMMENDATIONS

"Outcomes Assessment procedures must be brought to bear on the outreach programs so that their effectiveness may be measured. In addition more

publicity should attend outreach activities and efforts so that the local campus community and the University of Puerto Rico at large are better informed about what is going on".

"If UPRM has a commitment to outreach activities, the administration should communicate that fact to the campus community, and offer appropriate recognition for those who devote time to outreach activities."

UPRM RESPONSE

The diversity and amount of outreach work conducted in the institution has increased significantly. However, most of the efforts are still conducted without adequate assessments and publicity. The Office of Institutional Research (OIR) should provide guidance about how to effectively assess the outcomes of this important function. The Press Office is undergoing restructuring and should incorporate the dissemination of information about all the outreach activities in its mission. The dissemination of information within the institution is improving because an official bulletin is now being published again after a lapse of several years.

The personnel evaluation process is being redesigned and should allow for adequate rewarding of outreach efforts in the promotion process. However, until the new process is implemented, the current evaluation system doesn't provide for adequate weighting of outreach activities. In the short term, internal policies should be developed to facilitate and promote faculty involvement in outreach activities because otherwise the increased pressure toward research productivity could affect our achievements in that area of our mission.

3.3.1 OFFICE OF THE DEAN OF ACADEMIC AFFAIRS.

Outreach activities are offered mainly through the Admissions Office, Air Force ROTC Program, and the Library. The Admissions Office works annually with 33 schools, provides training and lectures to parents, teachers and students in other schools around the island, and participates in conferences, conventions, and exhibitions. The AFROTC has responded, on a yearly basis, to the call for help from the Red Cross to donate clothing to victims of hurricanes, tornados, earthquakes, and other catastrophes. The program also has participated in different activities for the community such as: (a) Five beach clean-ups in the Western area; (b) Annual breakfasts served at the Veterans

Hospital in Mayagüez; (c) Annual establishment of a library at a public school; (d) Orientation presented at drug and rehabilitation centers such as "Hogar Crea"; (e) Coordination of annual blood drives on campus for the Red Cross, and (f) color guards for duty for the opening of several community activities during the year. The General Library offered library orientations to more than 2100 public and private school students during the years 1995-2000. During the same period, professional librarians offered educational workshops to over 900 talented students who participated in the Advanced Level High School Program. The library has a Donation and Exchange Program that provided bibliographic materials, furniture, and photos to public school libraries, a public library, a museum, and a public music school. The most significant changes in outreach services are a consortium established with the Department of Education of Puerto Rico to establish technological infrastructures in a number of public school libraries, and the Older Citizen Employment Program, which provides older citizens the opportunity to work to meet the requirements to receive Social Security benefits.

3.3.2 COLLEGE OF AGRICULTURAL SCIENCES

3.3.2.1 Puerto Rico Agricultural Extension Service (AExt)

Most of the outreach is done throughout the Agricultural Extension program. With a home economist and an agricultural agent stationed in each of its 69 local offices, AExt disseminates and encourages the application of research-generated information and practical knowledge to develop life skills for individuals, families, communities, and businesses. The agency reaches the agriculture community via publications, daily radio and weekly TV programs on the government stations, newspaper articles in local papers, educational videos, seminars, and hands-on training. A list of 314 publications organized by specialties is available at no cost. AExt has recommended the recruitment of additional editors and a specialist in communications to strengthen the quality of its publications. Outreach has been expanded via satellite communication through a new project, Teaching and Learning at the Distance, which also serves the UPR system, governmental agencies, and schools.

Since 1985, under the sponsorship of the Kellogg Foundation, AExt has developed an Information Service System to improve services rendered to the community and to motivate farmers and youth to use computers as tools for technological innovation.

The Family, Community, and Leadership Program and the expanded Food and Nutrition Education Program, which focus on low-income audiences, have been rated successful when measured by the number of volunteer hours donated and the audience reached. The Program to Improve Nutrition in Puerto Rico [PIN, or, in Spanish, *el Programa para Mejorar la Nutrición en Puerto Rico* (MeNu)] is integrated into the Family and Consumer Sciences Program. The program is designed to help low income families make better use of the money they receive from their Nutritional Assistance Program (NAP/PAN) benefits. The teaching in the communities is done by the Home Economists of the Family and Consumer Sciences Program and the personnel working full time with PIN/MeNu. The impact of the program is felt throughout the island.

AExt develops interest in the areas of agriculture, home economics, citizenship, and leadership among young Puerto Ricans through its 4-H Program. Unfortunately, this program does not have enough full-time personnel at the state level, a situation that affects coordination within the program and limits the time that the subject matter specialists can spend producing publications and educational materials.

Three Youth at Risk projects have been established. The first one, which is in its third year, educates youth to strengthen self-esteem. Vieques Kids in Action for Science Education sponsors mentors for youth-at-risk and promotes science education. The Science Education Enrichment Program sponsored by AExt and the NSF is implementing an island-wide outreach program to 720 youths, 7 to 14 years of age, who are members of the local 4-H Clubs.

The Community Resource Development program helps rural communities to develop their human resources, overcoming obstacles that hinder their full development by using an effective training program of volunteer community leaders.

In the Home Economics Program different proposals have been approved in the Food Safety and Woman-Infant Care initiatives.

The Federal Government has given AExt guidelines to aim programming efforts toward national initiatives and public issues. AExt has made some progress on the Water Quality and Youth at Risk initiatives and is assisting more than 300 communities that have privately operated rural aqueducts comply with the new federal requirements on water filtration and purification. Moreover, AExt has just started a new effort on solid waste management aimed at waste reduction and recycling.

The AExt Agricultural Engineering Office is the only one on the island that provides technical help to farmers in the design and construction of agricultural structures. In addition, it provides training in animal waste management to all state agencies that offer technical help to farmers in this area.

3.3.2.2 Agricultural Experiment Station (AES)

Besides its research activities, the AES: (a) offers technical advice to farmers and agroindustrialists; (b) collaborates in formal teaching in the CAgS; (c) collaborates in the educational activities of the AExt; (d) offers seminars, conferences, forums and field days to farmers, agroindustrialists, agronomists, extensionists, researchers, students, government personnel, and to the public in general; (e) offers technical and scientific information to all academic level students from the public and private school systems and to the public in general; (f) sells fruit trees, ornamental plants, seeds and other propagation material, as well as surplus research products at reasonable prices; (g) provides research results and expertise to Caribbean Basin agriculture and to the agriculture of other tropical countries throughout the world; (h) offers Latin American and international students and professionals the opportunity to obtain graduate degrees and conduct research in the agricultural sciences; (i) conducts water and soil analyses at the Central Analytical and Pesticides Laboratory, mainly for pesticide residues and mineral content, respectively; and (j) supplies selected genetic material to farmers for beef cattle and swine production.

3.3.2.3 Office of International Programs of CAgS

This office has made the expertise, human resources, knowledge, and services of CAgS available to other countries, especially in Latin America and the Caribbean Basin. The Title XII

program usually funds this outreach for International Development, which deals mostly with agricultural development and increased food production for less-developed countries under the Famine Prevention and Freedom from Hunger initiative.

3.3.3.4 CAgS Additional Outreach Activities.

For the last 16 years the CAgS students have organized a festival entitled "Five Days with Our Land" (*Cinco Días con Nuestra Tierra*), which is open to the community. During the festival, representatives of agroindustry, the government, the university, and artisans from Puerto Rico exhibit their products, crafts, programs, and educational efforts on topics related to agriculture and the protection of the environment.

The college fFarm, which supports courses with its field and laboratory infrastructure is located on campus. This farm also provides the community with selected low-cost ornamental and crop plants, produce, fish and poultry products either raised on the farm or supplied from the Experiment Stations.

3.3.3 COLLEGE OF ARTS AND SCIENCES.

The CAS engages in hundreds of outreach activities per year. Some of these include: visiting K-12 schools; giving presentations, recitals, and seminars to the general community; hosting colloquia, theater festivals, and the annual celebration of Puerto Rico Week; maintaining a geological museum; supervising elementary and secondary students for local science fairs and summer projects; and collaborating with local communities to find solutions for social problems. The outreach efforts of the CAS may be categorized by department:

Biology: Conducts multiple activities, including lectures on scientific topics, to promote interest in the academic programs of the department among high school students.

Social Sciences: Conducts research and collaborates with communities on issues such as domestic violence, child abuse, AIDS prevention, support groups for women living with HIV/AIDS, and environmental issues. Provides lectures on history and contemporary issues to schools and community organizations, and visits schools to

provide information about the department's academic programs. Coordinates the Annual Symposium of Undergraduate Applied Social Research opened to the general public.

Economics: Organizes activities to promote its academic program among high school students and provides training for school teachers in the region on economic topics.

Physical Education: Coordinates intramural activities and the use of its facilities for community sports teams, including soccer, baseball, softball, basketball, and swimming, among others.

Nursing: Conducts multiple activities to recruit students from high schools and Regional Colleges. Coordinates clinics for the identification of health risks in local communities.

Hispanic Studies: Organizes exhibitions and presentations of books. Coordinates the Arts and Crafts fair and the Book Fair. Visits schools to promote its academic program. Hosts the Computer Writing and Style Laboratory which provides feedback and advice to students, faculty and the community.

Physics: Participates as mentors in the Science Fair competitions. Receives and provides presentations for school students around the island in the planetarium. Promotes its academic program by providing university students to visit local high schools.

Geology: Receives and provides presentations for K-12 students in the Geology Museum.

Humanities: Organizes art exhibits by in-house and external artists in the Arts Gallery. Coordinates theater presentations and festivals, poetry recitals, and special lectures on topics in Humanities.

English: Distributes used books to community libraries and to teachers in the educational system of Western Puerto Rico. Conducts an "Open Mike" as a forum for authors in the community. Sponsors an ongoing Colloquium on topics of interest to scholars

and members of the community. Collaborates with other departments in the organization and presentation of conferences for the larger community.

Mathematics: Provides training to school teachers interested in organizing Science and Mathematics Clubs in their schools. Coordinates the Annual Eugene Francis Mathematics Cup, a competition for high school students.

Chemistry: Hosts "Science on Wheels," a program that visits schools and provides exhibitions on chemistry. Organizes the Annual Chemistry Competition for high school students. Mentors science projects of high school students for the Science Fair competitions. Through the GLOBE program, provides training and advice to high school teachers on how to teach Chemistry.

The most significant outreach efforts of the CAS can be summarized in terms of increased work in the training of high school teachers by many departments (i.e. Economics, Physics, Chemistry, among others), an increase in artistic presentations sponsored by the Humanities Department, and the involvement of faculty and students from the Department of Social Sciences in research activities with local communities on many social issues. A multidisciplinary group of professors is evaluating a proposal to establish a center of voluntary services where students can receive credit for service to the community.

3.3.4 COLLEGE OF BUSINESS ADMINISTRATION.

The CBA promotes numerous activities in different areas of specialization. Some of these activities are extended to the general community through the following: (a) organization of Compu Expo, an annual computer and technology fair; (b) annual Job Fair; (c) Small-and-Middle-Size Enterprises Fair; (d) seminars for Certified Public Accountants, Certified Professional Secretaries, Human Resources examinations, Corporate and Labor Law Updating, Personal Financial Planning and others; (e) implementation of distance education courses for institutions or companies interested in in-house education for their employees; and (f) the Teacher Enhancement Program in Statistics

which is a program sponsored by NSF that introduces teachers from intermediate and high school levels to innovative methods of teaching statistics.

3.3.5 COLLEGE OF ENGINEERING.

The CE has been very active in outreach activities, particularly as far as K-12 outreach is concerned. The centerpiece of the CE's outreach activities is the Pre-College Engineering Program (PCEP), a two-week summer-residential program designed to introduce talented high school students to the engineering profession. The program is designed to assist participants in making an informed career selection by thoroughly exposing them to the engineering profession through a series of enhancing activities. Upon completion of the program, participants are able to decide if they really want to study engineering, and if so, which specific engineering discipline they prefer. The program has served a total of 500 students and its success is evidenced by the fact that 94% of the students served who went on to pursue careers in engineering have either completed their degree or are still active students in an engineering program. Corporate institutions provide funding for the program. A total of eight engineering students serve as full-time PCEP staff members during the life of the Program. In addition, approximately 50 other engineering students participate as resources in various seminars, panels, and lab presentations that form part of the PCEP experience. Participating as resources in PCEP affords engineering students the opportunity to communicate what they are learning, a process that requires reflection on their learning as a whole. Appendix L lists many other outreach activities sponsored by the engineering departments.

3.4 COLLEGE OF AGRICULTURAL SCIENCES: RESPONSE TO MSA 1995

In accordance with Public Law No. 1 of the Puerto Rican Legislature approved January 20, 1996, better known as the University Law, and Certification No. 13 of the Council of Higher Education, dated September 11, 1968, the College of Agricultural Sciences (CAgS) is the unit within UPRM where formal teaching, research, and extension in agriculture are integrated. The three functions are complementary and are included under a central scheme of three-dimensional

organization, which includes the Faculty of Agriculture, the Agricultural Experiment Station (AES), and the Agricultural Extension Service (AExt). A management team, including the Dean and Director and the Associate Dean of the Faculty of Agricultural Sciences, the Associate Dean and Deputy Director of the Agricultural Experiment Station (AES), and the Associate Dean and Deputy Director of the Agricultural Extension Service (AExt), imparts direction and guidance to the plans and programs of the CAgS. The Coordinator of the International Program in Agriculture adds another dimension to the functions of the College.

The MSA made recommendations and suggestions to the CAgS which involved reorganization of academic departments, student enrollment, and student retention rate. The actions taken by the CAgS in response to these suggestions are presented here.

3.4.1 COMPUTER SUPPORT AND INSTRUCTION

MSA RECOMMENDATIONS:

“As observed and as indicated in student interviews, teaching laboratories lack modern equipment and supplies. Students also complain of inadequate green houses.”

UPRM RESPONSE:

The computer room in the CAgS has acquired ten new computers, and two green houses have been repaired and equipped. The animal nutrition lab now has modern equipment.

3.4.2 EQUAL TREATMENT OF TEACHING, RESEARCH & EXTENSION FACULTY

MSA RECOMMENDATIONS:

“An issue of concern was a perception that teaching faculty are considered as more elite than research and extension faculty. Teaching faculty are paid on the same salary scale as the other two units yet work only during the academic calendar year, whereas research and extension faculty work for twelve months. The pay scale is the same for all three faculty groups.”

UPRM RESPONSE:

There are many differences in the employment duties and responsibilities of the teaching faculty compared to their counterparts in the research and extension areas. All three are vibrant and

important components of the academic community and of the CAgS. We are working to ensure that all groups are treated fairly. However, the nature of the work carried out by the researchers and extensionists demand different working schedules relative to the teaching faculty.

3.4.3 UNDERGRADUATE PROGRAMS

MSA RECOMMENDATIONS

“Administrative reorganization of the academic departments.”

UPRM RESPONSE:

The CAgS significantly impacts the growth and development of agriculture in Puerto Rico. Its academic programs assume the responsibility for the formation of human resources to supply answers to the challenges of our society. The agricultural sector requires efficiency in production in harmony with the environment in the management of natural resources that permit and encourage the sustainability of agricultural systems.

To improve its educational offerings, the CAgS has prepared a curriculum proposal to ensure a transformation process at the institutional level. The proposal considers the changing external environment which is characterized by a global economy, technological and productive innovations, regional integration, and new knowledge. Teaching and learning processes must be transformed and a renewal of the educational system, which takes into account the institutional context and the social/economic conditions of our society, needs to take place.

Two departments, Horticulture and Animal Industry, have presented specific proposals to revise their academic programs. The following is a report on some aspects of this ongoing transformation process:

Horticulture Department: A proposal for the revision of the Horticultural curriculum was presented in 1997.

Animal Industry Department: A proposal for the revision of the Animal Industry curriculum was completed in 1999, and it is now being considered by department faculty.

Agricultural Education Department: The department is considering offering undergraduate and graduate programs in Social Communication and Environmental Education in the Agricultural

Sciences and Family Ecology. At the doctoral level, programs for Agricultural Education, Extension, and the Environment; Social Communication in Agriculture; and Natural Resources and the Environment are under consideration.

In 1997, WCMN radio accepted a proposal presented by the Agricultural Education Department. As a result of this proposal, a program called "*Conversando desde el Conuco*" is presented every Tuesday from 7:00pm – 8:00pm. Topics related to agricultural education in Puerto Rico are discussed on this program. In addition, students participate in the discussions, which stimulate potential students to become involved in agricultural programs. During 1998-1999, 37 programs were conducted. The program also serves as a laboratory for the graduate course ExAg 6603 (Oral and Written Communication) and the undergraduate course ExAg 4015 (Introduction to Agricultural Communication). In addition, it serves the community and agricultural agencies within the Department of Education of the Commonwealth of Puerto Rico, the Extension Service Agency, and the Farm Service Agency. Student organizations such as the Future Farmers of America and 4-H Clubs have presented their activities on the program.

Pre-Veterinary Program: This program is a non-degree program in the Animal Industry Department. The Academic Affairs Committee of the Animal Industry Department has been working on several proposals for a complete curriculum reform including the Pre-Vet Program. The department is currently working on approving the corresponding changes and the actual proposal.

A bilateral agreement was established in 1995 with the School of Veterinary Medicine at the University of Wisconsin-Madison to accept at least one student from the Pre-Vet Program every year. Twenty students from the Animal Industry Department have been accepted in U.S. Veterinary Schools in the past ten years (1990-2000). Almost all of them came from the Pre-Vet Program and about one third went to a Veterinary Program immediately after finishing the Pre-Vet Program here.

Since most of the students in the Pre-Vet Program are not accepted into Veterinary School after their first three years, most of them transfer to other programs, especially the Animal Industry Program. Administrative mechanisms have been established to facilitate the transition to a Bachelor's program.

MSA RECOMMENDATIONS:

“Make aggressive efforts for student enrollment.”

UPRM RESPONSE:

A video was prepared to present all the academic programs offered by the CAgS. The video has been distributed to the personnel of the AExt to promote the programs in 69 municipalities of Puerto Rico where the AExt is represented. The video is presented at the fair "Five Days with Our Land," when thousands of students from the schools in Puerto Rico visit the Mayagüez Campus. Also, it has been used in high school activities where professors, graduate students, and academic counselors present information about these programs to the students.

A manual describing the academic programs offered in the Agriculture Sciences Department of the CAgS has been prepared and distributed to the UPRM freshman students.

A proposal was prepared by a committee composed of faculty members of different departments for the "Establishment of a Graduate Program in the Management of natural Resources in the Mayagüez Campus of the University of Puerto Rico."

The Agricultural Education Department proposed a change in its name to "Department of Education, Agriculture, Natural Resources, and Environment." These changes are in line with the current mission and objectives of the department and will help it attract more students.

The admission index for student admission into the CAgS was evaluated in an effort to maintain comparable common indices for the agricultural departments and programs.

Student enrollment has increased in the CAgS from 1995-96 to 1999-2000, as is shown in Tables 3.4.1, 3.4.2, and 3.4.3. These tables show that the number of entering freshmen (Table 3.4.1), undergraduate enrollment (Table 3.4.2), and graduate enrollment (Table 3.4.3) have all increased.

Table 3.4.1: Freshmen Admitted, CAgS, by Department or Program, 1995-96 to 1999-2000

DEPARTMENT / PROGRAM	1995-96	1996-97	1997-98	1998-99	1999-00
<i>General Agriculture</i>	12	12	12	19	29
<i>Agronomy</i>	65	45	54	53	60
<i>Agricultural Economics</i>	3	0	1	5	4
<i>Agricultural Education</i>	1	2	4	2	4
<i>Agricultural Extension</i>	0	0	0	5	4
<i>Horticulture</i>	7	5	6	12	15
<i>Animal Industry</i>	42	62	49	27	30
<i>Agricultural Engineering</i>	20	34	30	16	23
<i>Pre-Veterinary</i>	28	30	25	33	17
<i>Crop Protection</i>	3	2	6	8	8
<i>Agribusiness</i>	6	4	2	4	12
<i>Soil Science</i>	2	3	8	11	10
TOTAL	189	199	197	195	217

Table 3.4.2: Undergrad. Enrollment, CAgS, by Department or Program, 1995-96 to 1999-2000

DEPARTMENT / PROGRAM	1995-96	1996-97	1997-98	1998-99	1999-00
<i>General Agriculture</i>	19	26	39	49	71
<i>Agronomy</i>	221	204	211	219	218
<i>Agricultural Economics</i>	21	18	20	22	17
<i>Agricultural Education</i>	20	26	26	43	39
<i>Agricultural Extension</i>	16	14	16	30	29
<i>Horticulture</i>	52	49	52	58	72
<i>Animal Industry</i>	206	251	260	239	235
<i>Agricultural Engineering</i>	89	107	121	107	102
<i>Pre-Veterinary</i>	54	72	78	86	81
<i>Crop Protection</i>	14	15	16	20	20
<i>Agribusiness</i>	15	14	12	11	23
<i>Soil Science</i>	14	14	19	22	30
TOTAL	741	810	870	906	937

Table 3.4.3: Graduate Enrollment, CAgS, by Department or Program, 1995-96 to 1999-00

DEPARTMENT / PROGRAM	1995-96	1996-97	1997-98	1998-99	1999-00
<i>Agronomy</i>	12	11	9	10	14
<i>Food Science Technology</i>	26	33	28	26	33
<i>Agricultural Economics</i>	8	9	12	8	8
<i>Agricultural Education</i>	0	24	22	22	26
<i>Agricultural Extension</i>	0	7	12	13	13
<i>Animal Industry</i>	21	24	29	27	29
<i>Crop Protection</i>	20	24	22	22	17
<i>Soil Science</i>	13	12	14	13	14
<i>Horticulture</i>	17	16	21	23	10
TOTAL	117	160	169	164	164

Statistics from 1995-96 to 1999-2000 show an increase in the number of Bachelor's and Master's degrees conferred in the CAgS (see Tables 3.4.4 and 3.4.5).

Table 3.4.4: Bachelor's Degrees Conferred in the CAgS, 1995-96 to 1999-00

DEPARTMENT / PROGRAM	1995-96	1996-97	1997-98	1998-99	1999-00
<i>General Agriculture</i>	2	1	2	0	1
<i>Agronomy</i>	17	17	15	29	28
<i>Agricultural Economics</i>	5	1	2	8	2
<i>Agricultural Education</i>	7	4	1	4	10
<i>Agricultural Extension</i>	5	6	3	8	4
<i>Horticulture</i>	9	16	13	9	10
<i>Animal Industry</i>	29	43	34	37	36
<i>Agricultural Engineering</i>	7	9	9	20	12
<i>Crop Protection</i>	2	3	4	2	2
<i>Agribusiness</i>	3	2	3	2	3
<i>Soil Science</i>	1	1	3	1	3
TOTAL	87	103	89	120	111

Table 3.4.5: Master’s Degrees Conferred in the CAgS, 1995-96 to 1999-2000

DEPARTMEN/PROGRAM	1995-96	1996-97	1997-98	1998-99	1999-00
<i>Agronomy</i>	2	5	3	0	2
<i>Food Science Technology</i>	0	6	6	10	3
<i>Agricultural Economics</i>	2	3	2	4	2
<i>Agricultural Education</i>	0	0	0	1	2
<i>Agricultural Extension</i>	0	0	0	1	1
<i>Animal Industry</i>	5	2	4	3	4
<i>Crop Protection</i>	2	6	7	5	7
<i>Soil Science</i>	2	2	2	1	1
<i>Horticulture</i>	1	4	0	6	6
TOTAL	14	28	24	31	28

MSA RECOMMENDATION:

“Improve student retention rate.”

UPRM RESPONSE:

The retention rate for freshmen during the 1999-00 academic year was 80.74%. The programs with the highest retention rates were Agricultural Education, Pre-Veterinary Science, Horticulture, and Agricultural Engineering. The programs with lower rates of were Soil Sciences and Agribusiness (See Table 3.4.6).

Table 3.4.6: Retention of Freshmen Students in the CAgS during their first year, 1999-2000

DEPARTMENT / PROGRAM	NUMBER OF STUDENTS		%	%
	ADMITTED	DISMISSED	DISMISSED	RETAINED
<i>General Agriculture</i>	29	4	13.80	86.20
<i>Agronomy</i>	60	11	18.33	81.67
<i>Agricultural Economics</i>	4	1	25	75
<i>Agricultural Education</i>	4	0	0.0	100.0
<i>Agricultural Extension</i>	5	1	20.0	80.0
<i>Horticulture</i>	15	1	6.66	93.34
<i>Animal Industry</i>	30	9	30	70
<i>Agricultural Engineering</i>	23	3	13	87
<i>Pre-Veterinary</i>	18	0	0	100.0
<i>Crop Protection</i>	8	2	25	75
<i>Agribusiness</i>	12	6	50	50
<i>Soil Science</i>	10	4	40	60
TOTAL CAS	218	42	---	---
% Dismissed CAgS	---	19.26%	---	---
% Retained CAgS	---	80.74%	---	---

3.4.4 STRATEGIC PLANNING

MSA RECOMMENDATIONS:

“Establish a Strategic Plan for the College of Agricultural Sciences”

UPRM RESPONSE:

The CAgS started working on a Strategic Plan in 1995 to give direction to its administration and programs for the 1996-2002 period. The plan—*Plan Estratégico del Colegio de Ciencias Agrícolas, 1996-2002*—was developed with the recommendation that it be evaluated during a three-year term and reviewed as necessary. The Committee for the Strategic Plan was composed of a member from each department, from the AExt, and from the AES. It consisted of nine members and was presided over by the Director of the Office of Planning and Budget of the CAgS.

Over the last few years, the CAgS developed two Strategic Plans—*“Planes Estratégicos para la Investigación por Empresas”* and *“Planes de Acción Departamentales para Atender las Necesidades de Investigación en cada Empresa”*—to work with the AES. The five-year work plan that covers the period October 1, 1999 to September 30, 2004 considered achieving five main goals:

- an agricultural system that is highly competitive in the global economy
- a safe and secure food and fiber system
- a healthy, well-nourished population
- greater harmony between agriculture and the environment
- enhancing economic opportunities and the quality of life in Puerto Rico

The Strategic Plan of the CAgS was reviewed in 1999. A committee representing all the academic, research, and extension units of the College was established. The revised plan was distributed to all faculty members for comments and suggestions and was presented to the AES Administrators on October 26, 1999. Suggestions were incorporated into drafts. The revised Strategic Plan was sent to each faculty member and is currently under discussion by a special committee of the CAgS. Appendix M includes the Strategic Plan for the CAgS.

Currently, each academic department in the College has an active Committee for Strategic Planning purposes. The Departments of Crop Protection and Agricultural Education have presented Strategic Plans. Other departments are in the process of completing a study on this subject. All the academic departments, as well as the Office of International Programs, have reviewed their mission and objectives.

3.4.5 CONCLUSIONS

In 1995, the MSA highly commended the faculty of the CAgS for their dedication, competence, and energy and added that the faculty demonstrate much enthusiasm and dedication to their projects. The College is working continuously to facilitate the professional development of its faculty, to encourage the development of new research initiatives, and to provide adequate working conditions.

The CAgS has had a significant impact on the growth and development of agriculture in Puerto Rico. Through its diverse academic programs, the CAgS continues to provide the necessary training to its undergraduate and graduate students to strengthen and further develop the Puerto Rican agricultural system and the economy. The CAgS will continue to generate new undergraduate and graduate programs to allow us to address our mission and objectives. As previously mentioned, we anticipate generating new academic programs in environmental and agricultural education, natural resources and the environment, management of biophysical resources, and biotechnology.

Within the UPRM, the CAgS has played a leadership role in developing innovative distance learning initiatives. To continue with these efforts, we have updated and solidified our communications infrastructure and computer technology. Through our 69 AES offices, we are actively engaged in outreach activities throughout Puerto Rico and have played a key role in strengthening and maintaining a prosperous agriculture.

In order to stimulate and encourage the continuous growth and development of the CAgS, we have developed strategic plans for all our units. The elaboration and revision of these plans have

counted with the active participation of the departments, faculty, and researchers that form our College.

3.5 COLLEGE OF ENGINEERING: RESPONSE TO MSA 1995

3.5.1 INTRODUCTION

This section presents a clear and candid accounting of the College of Engineering's (CE's) progress since 1995, when the last MSAAR was issued for UPRM. In addition, this document presents a general assessment of the expected progress in the next five years. The document identifies the major recommendations brought up by MSA regarding the CE's strengths and weaknesses and presents the steps that have been taken to strengthen academic, research, and service activities. It also discusses the progress that has been made on issues brought forth in the 1995 SSR whether or not they were included in the MSAAR.

The 1995 MSA Report expressed concern over the administrative instability of UPRM, as evidenced by frequent changes in key administrative positions. It noted the need for strategic planning and a clear assessment methodology to aid decision making and resource allocation. Unfortunately, not much progress has been made in these areas. Since 1995, UPRM has had five Chancellors and numerous changes have occurred in all key administrative positions. A clear strategic planning and outcome assessment process has not been put in place, although, as evidenced by this report, an important aspect of an assessment plan has started: data gathering. While the CE has achieved progress in research-related areas, the current situation is such that, unless the University's governance situation is settled, progress within the CE will be at a standstill. To set the stage for the ensuing discussions, Table 3.5.1 presents a summary of some important indicators regarding the CE's state of affairs during the 1995-96 and 1998-99 academic years.

Table 3.5.1. General statistics of the College of Engineering (1995-96 vs. 1998-99). Faculty members = temporary & part-time appointments. NA = Not Available.

	Elect & Comp		Civil		Chemical		Mechanical		Industrial	
	1995	1998	1995	1998	1995	1998	1995	1998	1995	1998
<i>Undergrad students</i>	1223	1377	1059	960	752	752	751	817	684	719
<i>Grad students</i>	44	79	65	79	44	40	30	25	29	42
<i>Faculty members</i>	41	40	37	37	26	24	25	27	24	20
<i>Undergrad admsns</i>	212	232	163	177	140	136	113	119	164	120
<i>BS degrees granted</i>	153	187	150	148	106	93	130	110	85	113
<i>Grad admissions</i>	NA	10	NA	18	7	7	NA	9	NA	8
<i>MS degrees granted</i>	11	15	8	16	12	6	1	3	9	2
<i>Ph.D.s granted</i>	0	0	1	3	0	0	0	0	0	0
<i>Ext. research funds</i>	\$1.78M	\$3.02 M	\$1.66 M	\$1.93 M	\$ 338 K	\$752K	\$354K	\$324K	\$452K	\$273K

This document is organized as follows: Section 2 provides a detailed accounting of the progress that has been registered regarding computer support and instruction. Section 3 provides the CE's response to the evaluation report concerns regarding faculty issues (teaching loads and recruitment plans). Section 4 discusses the progress made in the area of undergraduate programs, with particular emphasis on the lowering of the credit hours required for graduation. Section 5 focuses on research and graduate studies issues relating to the improvement of the research environment, the length of time required to obtain a graduate degree, the content of graduate courses, and the level of release time for research. Section 6 focuses on the progress achieved regarding various issues that were not brought up explicitly in the MSA evaluation report but that were cited as goals in the self-study report. Section 7 provides an analysis of the current state of affairs in the College of Engineering, in light of the goals set forth in the 1995 self-study report, and recommendations regarding steps to be taken in the ensuing years to ensure that goals are attained prior to the next MSA accreditation visit. Finally, Section 8 provides conclusions regarding our progress since the last MSA visit.

3.5.2 COMPUTER SUPPORT AND INSTRUCTION

MSA RECOMMENDATION

"Major improvements in the availability of hardware and software, and in student access to computers, had been registered in all academic departments except Chemical Engineering"

UPRM RESPONSE

Department of Chemical Engineering (DChE): The DChE worked on a proposal to enhance its Undergraduate Computer Center and to strengthen the use of computers in its research and academic laboratories. As a result, 35 new computers with updated software were installed in March 1999. To accommodate the new equipment, the computer center was enlarged through the addition of an adjacent room. The center facilities currently consist of 40 computers that support various computer-related courses and general academic activities. The department received approval for a new Ph.D. Program in Chemical Engineering which started in January 2000. The department has also begun evaluating the possibility of offering a Master's Degree in Chemical Engineering without the thesis or project requirement. In addition, programs for certificates in Environmental Biotechnology and Manufacturing were developed and implemented. These programs require the approval of some courses related to the areas of specialization as electives within the primary concentration. The DChE currently has 100 networked PCs, a vast improvement over the 1995 total.

Even though the MSA evaluation found that the availability of computer hardware and software was adequate in all other engineering departments, each one of the remaining departments made progress in this area. Also, current and future plans targeting improvements in this area have been identified.

Department of Civil Engineering (DCE): The DCE has significantly increased the use of computer resources in its administrative, teaching, and research activities. It became a pioneer, incorporating the latest science and technology information in to its courses, laboratories, and research work. The department has two major computer centers and a Computer-Assisted Teaching

and Research Laboratory (CasTeR Lab). The Department has also designed and built a fiber optic network which serves the internal communications between centers and users and the external communications network within the University and with the outside world. Classrooms, laboratories, offices, and computer centers are all connected via network. There are four servers (administration, Departmental computer center, Infrastructure Research Center, and Computer-Assisted Teaching and Research Laboratory) that fulfill particular objectives and functions. The number of computer systems available to undergraduate and graduate students has increased significantly since 1995 from about 60 to well over 90. Basic software for general purpose applications has been acquired by the department. Specialized Civil Engineering applications have also been acquired. The department still faces significant limitations in the operation and maintenance of its information resources. Some of the most important limitations are:

- Lack of a recurrent adequate budget for maintaining and upgrading our computer hardware and software.
- The existing available resources do not satisfy the tremendous demand for updated information resources.
- The increase in the number of computers and electronic equipment has significantly overloaded the electrical infrastructure of the department. A significant upgrade of the main electrical systems has been accomplished. However, the smaller electrical subsystems still experience tremendous problems while providing service to our computer network. For example, only a few areas have been rewired and adequately grounded to hold the computer networks.
- Non-specialized personnel, students, and technical personnel do routine repair and maintenance of computers. Most of the sophisticated repairing and maintenance work requires too much time and is economically unfeasible.
- Site licenses and software upgrades are not sufficient to meet needs.
- The response time to solve routine software, hardware, and major infrastructure problems is too slow.

The above limitations negatively impact the level of service provided, user morale, student performance, faculty development, and administrative personnel efficiency. An Ad Hoc Computer Resources Committee has studied our computer infrastructure shortages in depth and has drawn up

a detailed proposal budgeted over \$2 million for the rehabilitation, upgrading, and modernization of the department's information resources infrastructure.

Electrical and Computer Engineering (ECE): The ECE dramatically increased the availability of computer resources. The department currently houses over 250 computers. Since the 1995 MSA visit, the department has upgraded all the computers in the academic and research labs that were available at the time and has also added two major academic computer laboratories. A large percentage of these resources has been obtained via research and academic grants supported by industry and federal agencies, although it should be pointed out that the Central Administration provided a \$250 K grant to the department for the purchase of 104 new computers in 1999.

Unfortunately, the availability of computer support does not meet the current demand. The large number of students in the department and the large number of courses that require computer use lead to significant resource contention that affects student performance, limits the faculty member's incorporation of computer-based homework assignments, and limits the legitimate need to use the available resources for activities such as web-based research. In addition, the department suffers from unreliable Internet connections, an insufficient number of system administrators, and lack of space for the development of new labs. For example, although the department has recently obtained major funding for six new labs, there is no space for them. Perhaps the most problematic situation is that it is becoming impossible to recruit qualified system and network administrators given the extremely low pay scale for these positions. It was not until February 2001 that the department was able to recruit a temporary system administrator. However, there is still a pressing need for a network administrator. This situation has a negative impact on the morale of students and faculty who require state of the art computer support.

General Engineering (DGE): All computers in the DGE are Pentium-based, ranging from 90MHZ to 350MHZ. In terms of software, the labs use Auto CAD (Releases 12 and 13). This year there are plans to move from NOVELL to WINDOWS NT 4.0. In the course on algorithms and programming, 80% of our students use C as a programming language, and the rest use FORTRAN, as specifically requested by the DCE. The department houses two computer laboratories that have a

total of 60 computers. There is also a Fluid Mechanics Laboratory that houses seven PCs for students' use.

Industrial Engineering (DIE): There are two computer centers. The first computer center has 36 Pentium PCs; the second has 25. All have several engineering software programs. There are 18 Pentium PCs in the Real Time Process Control Laboratory. In addition, a new Quality Control Laboratory has been set up with six computers and digital balances. The lab includes other measuring instruments such as micrometers and calipers.

Unfortunately, the availability of computer support does not meet the current demand. The time the students can use the computer center is limited because of the very high demand for the available resources, and the occurrence of many problems that keep the computers down for long times. The department lacks the resources to hire an expert in computers or networks as system administrator. There is a need for a system administrator with a bachelor's degree in computer engineering. In addition, the department suffers from unreliable Internet connections.

Mechanical Engineering (DME): Mechanical Engineering has two computer rooms and computational facilities in every laboratory. The number of computers does not seem to be a problem, but the access to the computer rooms is. Because of lack of classroom space, regular courses are being assigned to the computer rooms making them inaccessible to the students for general work. Many students are acquiring their own computers, but this only helps at night when the students are at home. Access to the Internet is limited by the slow system response. Even within the department, communications are slow according to current standards.

All Engineering departments have been able to maintain an adequate level of computer resources mostly through external funding and, in most cases, have made significant improvements in equipment resources and availability since the 1995 visit. However, many problems exist in terms of adequate facilities to house the computer equipment, routine maintenance of equipment, software upgrades, the expertise required for the system administrator positions, incorporation of computers into courses, computer instruction, lack of recurring budgets for computer resources, and reliability of internet connections.

3. 5. 3 FACULTY

MSA RECOMMENDATIONS

"The College of Engineering is faulted for maintaining high teaching loads (most faculty members teach four courses per semester—some are reduced to three courses when responsible for other duties). The teaching loads should be reduced in the interest of encouraging professional development, outreach, and responsible thesis research supervision. It is also noted that there is no evidence of a 'strategic' faculty recruitment plan."

UPRM RESPONSE

Recruitment. Since the 1995 MSA Review, the CE has been successful in increasing the percentage of professors with Ph.D. degrees, as can be gathered from Table 3.5.2. However, these increases are mainly the result of the success of our recruitment policy of sponsoring the doctoral studies of outstanding UPRM engineering graduates. From Table 3.5.3 shows that 25 Ph.D. graduates have been hired by this mechanism since 1995, and a total of nine professors are currently obtaining their Ph.D., under UPRM auspices. Unfortunately, it is becoming increasingly difficult for the CE to recruit future faculty members since good students receive very attractive offers from U.S. companies. This is a very troubling situation, given the increasing numbers of students being admitted to engineering programs and the large number of faculty members close to retirement .

Table 3.5.2: Percent of Faculty Members with a Ph.D. Degree: 1995-99. Numbers in parentheses include faculty with temporary appointments. NA = Not Available.

Department	1995-96	1998-1999	Percentage Change
<i>General Engineering</i>	43.9% (52%)	60.0% (42.9%)	36.7% (-17.5%)
<i>Civil Engineering</i>	71% (NA)	79.3% (62.1%)	11.7% (NA)
<i>Mechanical Engineering</i>	84% (NA)	100% (77.7%)	19.1% (NA)
<i>Electrical and Computer Eng.</i>	74.2% (NA)	80.0% (70.0)	7.8% (NA)
<i>Industrial Engineering</i>	NA (76.5%)	88.2% (75.0%)	(-2.0%)(NA)
<i>Chemical Engineering</i>	73.1% (83%)	88.3% (66.7%)	20.8%(-19.6%)

Table 3.5.3: Faculty hired since 1995 through institutional sponsorship program and number actively enrolled in program.

Department	Hired	Active
<i>General Engineering</i>	6	0
<i>Civil Engineering</i>	2	2
<i>Mechanical Engineering</i>	3	3
<i>Electrical and Computer Eng.</i>	8	2
<i>Industrial Engineering</i>	4	1
<i>Chemical Engineering</i>	1	1
Total	25	9

Regarding the MSA observation about the lack of a college-wide faculty recruitment plan, it should be pointed out that recruitment plans are now part of each department's Strategic Plan and that faculty are recruited according to their specialty and the needs of particular units. Each department uses a variety of vehicles in the recruitment process, including ads in national journals, and trade magazines. Reduced workloads are provided to new hires during their first two years to give them time to develop research programs. Lately, some departments also furnish new hires with computers, printers, and limited travel funds, or 10,000 Seed money grant. However, this is not an official policy and no budget has been assigned specifically for this.

Notwithstanding the targeted recruitment efforts made by the CE, it has been almost impossible to hire new faculty members. Table 3.5.4 and Table 3.5.5 indicate that, since the 1995 MSA visit, the average number of faculty members per department and the number of tenure track appointments has remained steady. This is a problem because the number of students enrolled has actually increased while the average course load of faculty members has decreased.

Table 3.5.4: Total Number of Faculty Members: College of Engineering 1995-98.

Department	1995-1996	1998-1999
<i>General Engineering</i>	40	42
<i>Civil Engineering</i>	37	37
<i>Mechanical Engineering</i>	25	27
<i>Electrical and Computer Eng.</i>	41	40
<i>Industrial Engineering</i>	24	20
<i>Chemical Engineering</i>	26	24

Table 3.5.5: Percent of Faculty Members w/ Tenure or Tenure-Track Appointments: 95-98.

Department	1995-1996	1998-1999
<i>General Engineering</i>	70.0%	71.4%
<i>Civil Engineering</i>	78.3%	78.4%
<i>Mechanical Engineering</i>	88%	70.3%
<i>Electrical and Computer Eng.</i>	75.6%	87.5%
<i>Industrial Engineering</i>	66.7%	85.0%
<i>Chemical Engineering</i>	84.6%	79.2%

The main reason for these recruitment problems is the uncompetitive salary scale here. In 1995, the salary for a newly recruited Assistant Professor with an Engineering Ph.D. degree at UPRM was \$37,464, while the average in U.S. institutions was \$47,300. Furthermore, the UPRM salary ranked in the lowest tenth percentile across all sectors for workers with engineering Ph.D. degrees. While the salary scale has steadily increased since 1995, the effective annual rate has been approximately 3%. Many engineering graduates at the Bachelor's level are receiving salary offers that are higher than the salaries of the faculty members. Table 3.5.6 compares the UPRM faculty salaries with the average 1997-98 starting salaries of UPRM engineering graduates of the various departments. Clearly, it takes a unique, highly motivated individual to choose to work at UPRM, particularly since first-rate output in research, service, and lecturing is expected from all faculty members. The recruitment problem becomes even worse in the case of non-tenure-track faculty members because salary conditions for temporary appointments are even less competitive and appointments are made only for the lecture period, can be renewed for a maximum of two years, and

offer no health and retirement plan benefits. Table 3.5.8 compares the effective salary received by faculty members with that of temporary appointments.

Table 3.5.6: Salary of UPRM Assistant Professors (98-99) vs. Maximum Starting Salaries of UPRM BS Grads (97-98).

	PR		USA		UPRM
	Private	Gov	Private	Gov	
<i>Civil Engineering</i>	\$40,000	\$31,000	\$53,000	---	\$42,252
<i>Mechanical Engineering</i>	\$54,000	\$30,000	\$58,000	---	\$42,252
<i>Electrical Engineering</i>	\$40,000	\$31,000	\$55,000	\$39,000	\$42,252
<i>Computer Engineering</i>	\$45,000	---	\$57,000	---	\$42,252
<i>Industrial Engineering</i>	\$73,000	\$35,000	\$48,500	---	\$42,252
<i>Chemical Engineering</i>	\$36,000	\$23,000	\$50,000	\$42,000	\$42,252
Average Across Departments	\$48,667	\$31,600	\$54,300	\$39,000	\$42,252

Table 3.5.7 Salary of UPRM Assistant Professors (98-99) vs. Average Starting Salaries of UPRM BS Grads (97-98).

	PR		USA		UPRM
	Private	Gov	Private	Gov	
<i>Civil Engineering</i>	\$27,500	\$22,500	\$40,500	---	\$42,252
<i>Mechanical Engineering</i>	\$27,000	\$34,000	\$48,000	---	\$42,252
<i>Electrical Engineering</i>	\$26,000	\$20,500	\$39,500	\$30,900	\$42,252
<i>Computer Engineering</i>	\$33,000	---	\$49,000	---	\$42,252
<i>Industrial Engineering</i>	\$45,500	\$35,000	\$41,250	---	\$42,252
<i>Chemical Engineering</i>	\$29,000	\$23,000	\$46,000	\$38,000	\$42,252
Average Across Departments	\$30,916	\$28,600	\$41,208	\$33,450	\$42,252

Table 3.5.8 Comparison of effective annual salary of tenure-track vs. temporary faculty members.

Appointment	Instructor		Assistant Professor	
	MS	Ph.D	MS	PhD
Tenure Track	\$33,180	\$40,128	\$36,060	\$43,704
Temporary	\$24,885	\$30,096	\$27,045	\$32,778

Teaching Loads. The CE has worked towards maintaining a target load of 75% teaching (nine credits) and 25% research and services, as presented in Table 3.5.9. All departments have

experienced a decrease in the average number of credit hours taught by a professor, except the DGE. This situation places faculty members in this department at a disadvantage during the promotion process, since they are required to perform research at the same level as faculty members in other departments. The decrease is because newly recruited faculty members are assigned loads consisting of 50% teaching and 50% research. This policy has been particularly effective in enhancing research productivity within the CE, but has had the negative effect of severely limiting course offerings, thus contributing to the longer periods required by engineering students to obtain their degrees. The main reason for this is that professors close to retirement offer 12-15 credit hours for courses per semester. New faculty members are expected to devote half time to research and can thus offer only six credit hours when replacing a retiring professor.

Table 3.5.9. Average Teaching Loads for CE, 1995-99. Normal load 12 credit hours per semester. Release time is given for research and administrative affairs. NA = Not Available.

Department	1995-96	1996-97	1997-98	1998-1999
<i>General Engineering</i>	9.12	9.72	9.96	10.2
<i>Civil Engineering</i>	9.94	10.52	10.39	9.72
<i>Mechanical Engineering</i>	NA	NA	NA	12
<i>Electrical and Computer Eng.</i>	11	10.3	10.3	8.7
<i>Industrial Engineering</i>	10.58	9.74	9.02	9.07
<i>Chemical Engineering</i>	10.1	10.3	9.5	9.6

The above discussion shows that the CE is struggling with balancing its research and academic missions. The difficulty in recruiting faculty members, the large number of courses with failure rates over 30%, and the increase in new student admissions further exacerbate the problem. This is best illustrated by the large student-to-faculty ratio present in some engineering departments, as presented in Table 3.5.10. UPRM wishes to model itself after North Carolina State University, which has been consistently able to double its yearly research funds every five years. North Carolina State has a student-to-faculty ratio of only 20 to 1. UPRM has a student-to-faculty ratio of 33 to 1.

Table 3.5.10 Student-Faculty Ratio: College of Engineering 1995-98. The normalized column refers to what the student-faculty ratio would be if the average course load of faculty members were nine credit hours. NA = Not Available.

Department	1995-96	1998-1999	1998-1999 Normalized
<i>Civil Engineering</i>	NA	17:1	18:1
<i>Mechanical Engineering</i>	NA	19:1	24:1
<i>Electrical and Computer Eng.</i>	NA	33:1	30:1
<i>Industrial Engineering</i>	NA	38:1	38:1
<i>Chemical Engineering</i>	NA	19:1	20:1
Average Across Departments	NA	25:1	26:1

3.5.4 UNDERGRADUATE PROGRAMS

The MSA Report commends the CE for the diversity of its student and faculty populations. In particular, the report cites the fact that 36% of the engineering students and 14% of the engineering professors are women. The report also notes that the student population in some departments is composed primarily of women (60% in the case of Industrial Engineering).

MSA RECOMMENDATIONS

"Programs are too long and the number of credit hours required should be lowered. The report states that the engineering curricula calls for up to 179 semester credits for the BS degree, a number that is significantly higher than that which is required at most engineering schools."

Some of the recommendations made by MSA to solve this situation were the following: (1) "making some courses now required for all students elective" and (2) "eliminating less important, possibly outdated, courses."

UPRM RESPONSE

Diversity. During the last five years the CE has maintained the diversity of its student population. Since the MSA Report in 1995, the percentage of women has continued to be 36%. During the 1998-99 academic year, the percentage of women students in each program was: Chemical Engineering, 61.3%; Civil Engineering, 33.5%; Electrical Engineering, 23.3%; Computer Engineering, 28.1%; Industrial Engineering, 57.7%; and Mechanical Engineering, 20.9%.

Length of Programs. Each department has been assigned the task of reducing the number of credit hours without affecting the quality of the programs. Table 3.5.11 indicates the small progress that has been registered since 1995.

Table 3.5.11 Number of credit hours required for BS degree: College of Engineering 1995-98.

Department	1995-96	1998-1999	Percentage Change
<i>Civil Engineering</i>	179	179	0.0%
<i>Mechanical Engineering</i>	175	175	0.0%
<i>Electrical Engineering</i>	173	168	2.9%
<i>Computer Engineering</i>	168	168	0.0%
<i>Industrial Engineering</i>	174	174	0.0%
<i>Chemical Engineering</i>	172	172	0.0%
Average Across Departments	173.5	172.6	0.6%

A faculty subcommittee has developed a plan for the restructuring of all engineering programs so that the total number of credit hours does not exceed 150. The following is an overview of the curriculum revision effort now taking place in the CE.

Civil Engineering: The 179 credit-hour curriculum has not changed since 1995-96. However, in December, 1995, the DCE approved a curriculum comprised of 165 credit hours. This revision was not approved by the Faculty Academic Affairs Committee. The department is now working on a new curriculum revision that is more in line with ABET 2000 requirements and carries a reduction in required credit hours to about 154.

Electrical and Computer Engineering: The department has formed a Curriculum Revision Committee whose members are the presidents of each technical area committee within the department. The Committee has worked to reduce credit hours and to integrate design experiences throughout the curriculum. A draft of the revision is scheduled to be completed and submitted to the department for approval by the end of the Spring 2000 academic semester.

Chemical Engineering: The department plans to do an in-depth revision of the undergraduate curriculum..

Industrial Engineering: A curriculum revision was submitted to the Engineering Faculty Committee for Academic Affairs on August 25, 1999. This revision proposes a reduction in the number of credit hours to 164. One recommendation to reduce the number of credit hours, was to eliminate the Precalculus requisite. These changes are currently pending approval by the Engineering Faculty Committee for Academic Affairs.

Mechanical Engineering: The DME has developed a new curriculum that reduces the number of credit hours to 159. The proposed curriculum is currently being evaluated by the Academic Affairs Committee of the CE.

3.5.4.3 Success of BS Graduates in the CE

Engineering graduates are generally successful in obtaining employment upon graduation, as evidenced by Tables 3.5.12 and 3.5.13. However, the percentage who do not have jobs by graduation has actually increased since 1995 and the brain drain problem is worsening because more graduates are taking jobs in the U.S. rather than in Puerto Rico.

Table 3.5.12 BS graduate employment statistics: College of Engineering 1995-96.

Department	Work PR	Work US	Grad School	Seeking Employment
<i>Chemical Engineering</i>	50.00%	13.46%	18.27%	18.27%
<i>Civil Engineering</i>	70.45%	4.55%	12.12%	12.88%
<i>Computer Engineering</i>	43.33%	26.67%	23.33%	6.67%
<i>Electrical Engineering</i>	50.94%	19.81%	13.21%	16.04%
<i>Industrial Engineering</i>	76.47%	2.35%	10.59%	10.59%
<i>Mechanical Engineering</i>	71.54%	4.07%	13.01%	11.38%
Avg Across Depts.	62.93%	9.66%	13.97%	13.45%

Table 3.5.13 BS graduate employment statistics: College of Engineering 1998-99.

Department	Work PR	Work US	Grad School	Seeking Employment
<i>Chemical Engineering</i>	32.05%	25.64%	19.23%	23.08%
<i>Civil Engineering</i>	51.54%	0.77%	24.62%	23.08%
<i>Computer Engineering</i>	29.41%	50.98%	11.76%	7.84%
<i>Electrical Engineering</i>	39.29%	26.79%	12.50%	21.43%
<i>Industrial Engineering</i>	41.41%	19.19%	17.17%	22.22%
<i>Mechanical Engineering</i>	40.48%	27.38%	17.86%	14.29%
Avg. Across Depts	40.79%	21.48%	17.87%	19.86%

3.5.5 RESEARCH AND GRADUATE STUDY

The MSA report commends the CE for the high level of research being conducted. Specifically, the report notes that the CE produced approximately 60 proposals per year during the period of evaluation and that 25% of the faculty had funded projects.

MSA RECOMMENDATIONS

“The MSA report expressed concern about the overbudget salaries obtained by some researchers during academic sessions. The MSA contends that the overbudget salary option should be eliminated except during the summer months to avoid the possibility that both teaching and research effectiveness could be compromised.”

Another significant concern at the time of their visit was that only five of the over 200 graduate students in the CE were candidates for a Master’s degree. A large majority of the graduate students interviewed expressed high dissatisfaction with the time required to obtain the Masters degree and with the quality and availability of graduate courses. The lengthy time required to obtain a degree was blamed on various factors: (1) the infrequent offering of graduate level courses, (2) preoccupation of major professors with heavy teaching and committee assignments, (3) indecision on the part of major professors regarding the direction and scope of student research, and (4) unreasonable expectations concerning the amount of research required for the degree (often enough to lead to a publication in a refereed journal). The MSA also identified as an additional problem the

low level of instruction, in the sense that the material covered in graduate courses was reported as just a little different from what is found in a corresponding advanced level undergraduate course.

UPRM RESPONSE

Level of Research. The CE has grown substantially in research output since the 1995 MSA visit. The number of research grants has increased significantly, as shown in Figure 3.5.1, and the dissemination of research results has also increased dramatically as illustrated in Table 3.5.14. In addition, since 1995, faculty members of the CE have been the beneficiaries of four NSF Career Awards and one NSF Presidential Career Award. The Electrical and Computer Engineering Department also figures as a partner in two NSF Engineering Research Centers of Excellence (i.e., the Virginia Tech Center for Power Electronic Systems and the Georgia Tech Packaging Research Center). The Electrical and Computer Engineering Department is also a core partner in the Subsurface Sensing and Imaging Engineering Research Center of Excellence being proposed in conjunction with Northeastern University, Boston University, and the Rensselaer Polytechnic Institute.

Since 1995, faculty members of the Civil Engineering Department have published two books and three book chapters. Faculty members from the Electrical and Computer Engineering Department have published two book chapters and a book. The Mechanical Engineering Department has also produced one patent and has two patents pending.

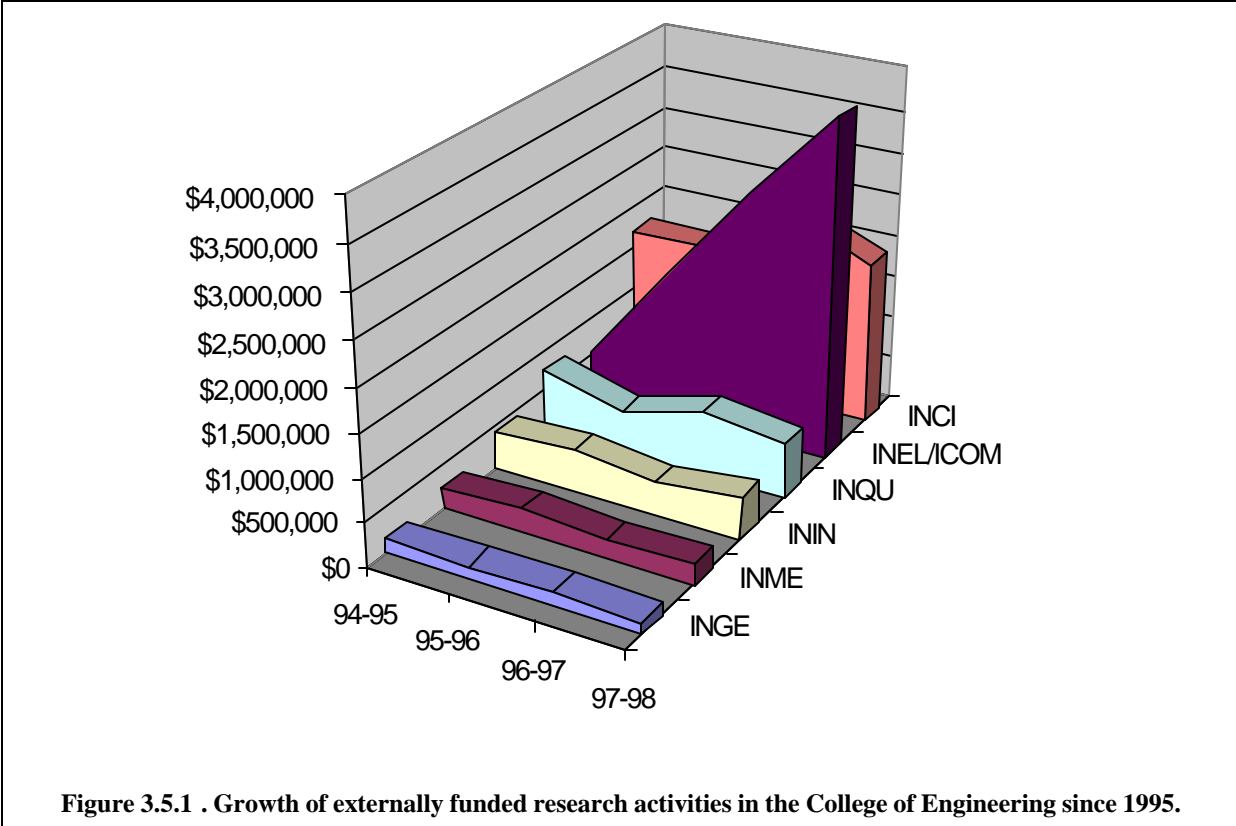


Figure 3.5.1 . Growth of externally funded research activities in the College of Engineering since 1995.

Table 3.5.14. Referred publications, by department, College of Engineering, 1995-99. Numbers include local and international conferences, journal articles, book chapters, and books. NA = Not Available

Department	1995-96	1996-97	1997-98	1998-99	Total
<i>General Engineering</i>	18	17	7	5	47
<i>Civil Engineering</i>	27	28	27	43	125
<i>Mechanical Engineering</i>	NA	NA	NA	NA	NA
<i>Electrical and Computer Eng.</i>	NA	NA	NA	NA	NA
<i>Industrial Engineering</i>	20	19	32	16	87
<i>Chemical Engineering</i>	11	6	6	4	27

While the progress registered in the research area has been significant, the lack of adequate physical facilities, the unreliability of computer communications, the limitations in available seed money and matching funds, and the increasing student-to-faculty ratios are threatening to limit the dramatic advances that have been made.

Time Required for Master's Degree. The CE agrees that the length of time required to obtain a Master's degree is often excessive. While there are many factors influencing the average

time to graduation in addition to those pointed out by the MSA, perhaps the most significant are the following:

- The strong emphasis that the institution places on research forces some faculty members to rely on student Master's theses and projects as sources of refereed publications.
- Students find jobs before finishing and, therefore, the time allocated for research is reduced.

The fact that Civil Engineering has a Ph.D. program and Chemical Engineering and Electrical and Computer Engineering Departments have submitted proposals for the creation of Ph.D. programs should help alleviate the first problem, since research emphasis will shift to these programs. The second factor is representative of a retention problem that will be alleviated as graduate programs become more adaptable to their students and become more selective in the students who are recruited and accepted into the programs. In what follows, we provide an overview of what some departments are doing to address these problems.

Civil Engineering: Although many internal and external reasons have been identified for the excessive length of time it takes students to complete their studies, the department has taken measures to make sure students are well advised, supervised, and mentored. Some measures taken are:

- Orientation meetings at the beginning of every semester.
- Follow-up records on students' progress.
- Written progress reports every semester.
- No more than four semesters of assistantships to any student, except under extraordinary conditions.
- Academic counseling during the registration period.
- Reduced administrative procedures to present and approve research proposals.
- A course (non-thesis, non-project) program (Plan III) which significantly shortens the time for non-research students to finish the master's degree.
- Graduate counselor follow up on each student's performance.

Chemical Engineering: The departmental administration took steps to bring the length of time required to obtain the Master's degree close to the expected two years indicated in the Bulletin

of Information. No assistantships are now provided beyond the four semesters of the two-year program.

Mechanical Engineering: Financial aid has been limited to two years.

Electrical and Computer Engineering: The department surveyed its graduate students and learned that students feel that the main reasons they take too long to complete their Master's degree are: (1) limited course offerings; (2) length of time needed to find a suitable research topic; (3) length of time required to purchase equipment and materials necessary for thesis work; and (4) the fact that most work full-time.

Frequency of Graduate Course Offerings. The CE agrees that course offerings are limited in its graduate programs; however, the frequency of course offerings is well established and almost all departments have published long-term plans for course offerings. However, scheduled courses sometimes cannot be offered because at least three students must be enrolled for the course to be offered.

Level of Instruction. The issue of low level of instruction in some graduate courses will be addressed during the current academic year as part of the CE's effort to establish meaningful outcomes assessment practices.

Overbudget Salaries. The College of Engineering defends the overbudget salary option for faculty members due to the low salaries and large student-to-faculty ratios. However, this is not a healthy situation. Even young faculty members enter into the overbudget category, since they are given six credit hours release time for research, but are then assigned more than six credit hours of courses to satisfy student demand. From Table 3.5.15 it is evident, that during the four years since the MSA visit, the percentage of faculty members with an overbudget salary has risen significantly in some departments.

The increase in overbudget salaries registered by the DECE occurs because many new faculty members with release time for research had to pick up the slack in course offerings from retiring faculty members. Furthermore, in 1998-99 faculty members teaching courses which were

historically taught in an *ad honorem* fashion (e.g., undergraduate research) were compensated for their efforts.

Table 3.5.15. Percentage of faculty members with an overbudget salary during the academic year (non-summer months) in the College of Engineering 1995-98.

Department	1995-96	1998-1999
<i>General Engineering</i>	21%	24%
<i>Civil Engineering</i>	53.7%	74.6%
<i>Mechanical Engineering</i>	23%	29%
<i>Electrical & Computer Eng.</i>	42.6%	77.6%
<i>Industrial Engineering</i>	26.8%	22.7%
<i>Chemical Engineering</i>	40%	33%

The large increase in overbudget salaries registered by the ECE Department was mainly due to the fact that many new faculty members with release time for research had to pick up the slack in course offerings from retiring faculty members and to the fact that in 1998-99, faculty members teaching courses which were historically taught in an *ad honorem* fashion (e.g., undergraduate research) were compensated for their efforts.

3.5.6 CONCLUSIONS

A quantitative comparison of the state of affairs of the CE during the 1995 visit by the Middle States Association Accreditation Board and the state of affairs during the 1998-99 academic year has been presented. The comparison has centered on the various recommendations put forth by the MSA in their "1995 Report to the Faculty, Administration, Trustees, Students of University of Puerto Rico at Mayagüez. This report has demonstrated that the CE has achieved considerable success in recent years in areas such as research and development, even while operating under very difficult conditions (e.g., severe infrastructure limitations and frequent changes in key administrative positions). Specific issues that are limiting the further development of our programs have been identified, and recommendations have been made with regard to how to address them.

The CE is particularly proud of its contribution towards achieving many of the core objectives of the University of Puerto Rico-Mayagüez, as set forth in the 1995 SSR. The acceptance

of our graduates in industry is an indicator that the quality of instruction in our engineering programs is exceptional. The large percentage of UPRM external research funds demonstrates that the quality of the research carried out is well recognized. Participation in industry and K-12 activities proves that the College is deeply committed to community service. In summary, we have demonstrated that our College has faithfully complied with the key core objective of directing the efforts and initiatives of the campus equally in three fundamental areas: instruction, research, and services to the community.

3.6 College of Arts and Sciences: Response to MSA 1995

3.6.1 INTRODUCTION

The Periodic Review Report provided the College of Arts and Sciences (CAS) the opportunity to review its accomplishments during the last five years (academic years 1995-96 to 1999-2000 inclusive) and develop strategic plans for the next five years. This section of the PRR addresses some of the strengths and weaknesses of the College and responds to specific concerns, recommendations, and commendations as outlined in the MSA response to the UPRM SSR of 1995. Some MSA responses were addressed to specific departments, whereas others pertained to several, if not all, departments within the CAS. The impact on the CAS of more general University issues identified by MSA is also discussed. The progress report is divided into the following sections: Computer Support and Instruction, Faculty, Undergraduate Programs, Research and Graduate Study, Self-Study Commitments, Analysis and Recommendations, and Conclusions.

The CAS comprises 13 departments, which house 28 undergraduate and 12 graduate programs. The undergraduate departments and their programs are: 1) Biology, which includes Biology, Industrial Microbiology, and Pre-Medicine; (2) Chemistry; (3) Economics; (4) English; (5) Geology; (6) Hispanic Studies; (7) Humanities, which encompasses Comparative Literature, French, Philosophy, Plastic Arts, and Theory of Art; (8) Mathematics, which includes Computer Science, Mathematical Education, and Pure Mathematics; (9) Nursing; (10) Physical Education, which has Coaching, Recreation, and Teaching; (11) Physics, which oversees Physical Sciences and Physics;

and (12) Social Sciences, which houses programs in History, Political Science, Psychology, Social Sciences, and Sociology. The Department of Marine Sciences is exclusively a graduate department that offers both the Ph.D. and MS. Also, the Office of the Dean coordinates the Industrial Biotechnology Program which is a five-year interdisciplinary undergraduate program. Other Master's degree programs are available in Biology, Chemistry, English, Geology, Hispanic Studies, Physics, and Mathematics, (with options in Computer Science, Applied Mathematics, Pure Mathematics, and Statistics). New graduate programs have been developed in Geology (MS) and in Nursing (MSN), and a joint Ph.D. program in Computational Mathematics between UPRM and UPR-Río Piedras has been approved by the Academic Senate and the Administrative Board.

3.6.2 COMPUTER SUPPORT AND INSTRUCTION

During the last five years, the CAS and its departments have made great strides in providing computers for educational use. Table 3.6.1 summarizes data on the number of computers allocated to students and faculty by department in 1999-2000. It is important to admit though, that most faculty offices in the Arts departments were equipped for the first time with computers during the last two academic years. The lack of faculty access to computers during past years was a huge challenge for the development of research and the working conditions in the Arts departments. In addition, every faculty office and many classrooms now have Internet access. Fiber optic fiber lines were installed in every academic building on campus by the University, but individual colleges and/or departments were required to provide funds for the wiring within buildings. The CAS provided partial-to-complete support for fiber optic installation for computers, telephones, and other systems in all academic buildings with the exception of the Physics Building that already had extensive local area networks. Upgrading of the Physics Building to fiber optic level is planned for 2000-2001. The Office of the Dean also maintains a laboratory for students in the Chardón building, shared by Humanities, English, Social Sciences, and Hispanic Studies. The laboratory consists of 40 computers and associated peripheral equipment. Faculty are allowed to use the facility for classroom instruction.

Moreover, the Office of the Dean supports the different departments in the acquisition of new computer equipment.

Table 3.6.1 Computer resources in the College of Arts and Sciences by department for 1999-2000.

Department	Students	Faculty	Total
<i>Biology</i>	36	53	89
<i>Chemistry</i>	30	24	54
<i>Economics</i>	26	11	37
<i>English</i>	28	9	37
<i>Geology</i>	19	12	31
<i>Hispanic Studies</i>	30	15	45
<i>Humanities</i>	40	41	81
<i>Marine Sciences</i>	28	39	67
<i>Mathematics</i>	100	57	157
<i>Nursing</i>	17	5	22
<i>Physical Education</i>	9	3	12
<i>Physics</i>	75	28	103
<i>Social Sciences</i>	31	38	69
TOTAL	469	304	773

3.6.3 ENROLLMENT

Enrollment in the CAS during the five-year period ending in 2000 climbed 4% at the undergraduate and 12% at the graduate levels (Table 3.6.2). Increases in the Arts outpaced those in the Sciences: 13% vs. -0.5% for undergraduate and 19% vs. 10% for graduate programs. The number of BA/BS, MA/MS, and Ph.D. degrees conferred also rose 6%, 17%, and 33%, respectively.

Table 3.6.2 Enrollment and degrees conferred in the College of Arts and Sciences from 1995-96 to 1999-00.

CAS	1995-96	1996-97	1997-98	1998-99	1999-00	Increase 1995-00
<i>Enrollment (undergraduate)</i>	4,205	4,225	4,365	4,353	4,385	4%
<i>Arts</i>	1,433	1,445	1,554	1,589	1,625	13%
<i>Sciences</i>	2,772	2,780	2,811	2,764	2,760	-0.5%
<i>Enrollment (graduate)</i>	299	299	334	341	335	12%
<i>Arts</i>	52	52	67	67	62	19%
<i>Sciences</i>	247	247	267	274	273	10%
<i>BS/BA degrees</i>	602	625	596	603	641	6%
<i>Arts</i>	228	240	227	226	242	6%
<i>Sciences</i>	374	385	369	377	399	7%
<i>MS/MA degrees</i>	59	48	64	56	69	17%
<i>Arts</i>	7	7	13	13	10	43%
<i>Sciences</i>	52	41	51	43	59	13%
<i>Ph.D. (Marine Sciences)</i>	3	2	3	5	4	33%

The number of active faculty grew by 24% from 367 in academic year 1995-96 to 457 in academic year 1999-2000 (Table 3.6.3).

Table 3.6.3 Enrollment, active faculty, and budget for the College of Arts and Sciences for the period 1995-96 to 1999-00. ["active"=Tenured, tenure track, and temporary faculty.]

CAS	1995-96	1996-97	1997-98	1998-99	1999-00	Increase 1995-00
<i>Enrollment</i>	4,205	4,225	4,365	4,353	4,385	4%
<i>Faculty</i>	367	423	459	460	457	24%
<i>Budget</i>	\$23,119,694	\$27,126,230	\$27,032,948	\$24,199,265	\$24,564,445	6.25%

The budget for the CAS, however, experienced only a 6.25% gain, down from a 17% increase experienced in academic year 1996-97. As much as 90% of the budget is allocated to salaries; residual budgets (equipment, travel, materials and special activities) are the remaining budget subtracting faculty, staff, and TA/RA salaries from the departmental operating budgets. Two important points emerge. First, the residual budget of the CAS declined by 8% during the past five years. Second, the changes in the residual budgets of the departments are variable, although most budgets have been cut back. The budget issues are not straightforward. Some of the declines may reflect the filling of positions that were vacant in 1995-96, when more discretionary funds were available to the departments. Chemistry, for example, increased the number of active faculty (Table 3.6.9) by 53% between 1995-96 and 1999-2000, whereas the tenured faculty increased by 25% (Table 3.6.10); and therefore had a decline in residual budget; the Geology Department has, at present, two vacant positions, which accounts for their large discretionary budget.

During the years 1995-96 to 1996-97, enrollment was increasing slowly, perhaps signaling the end of significant increases and the observed plateau towards the year 1999-2000 of 4,348 students. Added pressure was placed on the CAS by the growth in the other Colleges since 1995. The increases felt by individual programs and departments during the past five years, however, were not uniform, as Tables 3.6.4, 3.6.5, and 3.6.6 show. Biology, for example, experienced a negative growth in its undergraduate (all programs) and graduate enrollments of -3% and -7%, respectively, whereas Hispanic Studies saw 17% and 52% growth at the undergraduate and graduate levels,

respectively. Caution must be exercised when interpreting the statistics. The Industrial Biotechnology Program (8% increase) is felt largely in the Biology and Chemistry Departments, where the bulk of the teaching occurs, but is not reflected in the number of majors in those departments. In addition, the attrition experienced in Biology (-3%) is largely the result of a decline in the Pre- Medicine Program (-25%). The other two options, Biology (8%) and Industrial Microbiology (-4%), show opposing trends. Students interested in Biology seem to be selecting those two options rather than Pre-medicine, and some of them will change options while completing their degrees. Chemistry and Mathematics enrollments grew by -9% and 5%. Most of the Arts departments have experienced significant growth during this time period.

Great increases in enrollment were also observed in the graduate programs. Most departments experienced growth during the past five years. Further development of the graduate programs will be required during the coming five years to maintain quality while enrollments increases. This includes adequate funding for teaching and research assistants, proper curricula, faculty who have doctoral degrees, and an environment which fosters research. New graduate programs should be developed in the arts given the increasing demand at the undergraduate level.

3.6.4 FACULTY

The MSA commended the faculty of the CAS for their credentials, experience, and education, citing that enrollment increases at UPRM have put additional pressures on the College as it strives to meet the demands of its majors and provide service courses to all students on campus. That situation still remains. Some of their commendations were related to: (a) the commitment of the faculty in Humanities and Social Sciences departments to curriculum development and revision, and their interdisciplinary work, and ; (b) the high percentage of faculty with doctoral degrees in the Department of Hispanic Studies. The following paragraphs indicate the recommendations made by MSA in 1995 about faculty preparation, recruitment, development, teaching loads, and evaluation.

Table 3.6.4 Undergraduate enrollment in the College of Arts and Sciences by department and program from period 1995-96 to 1999-00.

Department and program	1995-96	1996-97	1997-98	1998-99	1999-00	Increase 95-00
Biology	1,310	1,311	1,351	1,309	1,275	-3%
<i>Biology</i>	746	744	812	819	805	8%
<i>Industrial Microbiology</i>	213	214	228	212	204	-4%
<i>Pre-Medicine</i>	351	353	311	278	266	-25%
Chemistry	398	399	374	362	361	-9%
Economics	79	80	71	82	85	7%
English	91	91	102	105	100	9%
Geology	90	90	94	111	121	34%
Hispanic Studies	59	60	73	73	69	17%
Humanities	186	186	195	215	211	13%
<i>Comparative Literature</i>	21	21	20	26	25	19%
<i>French</i>	0	24	25	20	24	0%
<i>Philosophy</i>	27	27	29	30	31	15%
<i>Plastic Arts</i>	98	98	105	122	118	20%
<i>Theory of Art</i>	16	16	16	17	13	-19%
Industrial Biotechnology	92	92	91	85	99	8%
Mathematics	398	429	452	428	418	5%
<i>Computer Science</i>	207	208	234	223	204	-2%
<i>Mathematical Education</i>	55	56	64	62	79	44%
<i>Pure Mathematics</i>	165	165	154	143	135	-19%
Nursing	254	256	255	248	249	-2%
<i>Bachelor</i>	220	222	229	236	244	11%
<i>Associate</i>	34	34	26	12	5	-85%
Physical Education	202	208	233	245	233	15%
<i>Coaching</i>					81	
<i>Teaching</i>					115	
<i>Recreational</i>					37	
Physics	235	237	220	233	242	3%
<i>Physical Sciences</i>	129	130	136	153	162	25%
<i>Physics</i>	106	107	84	80	80	-25%
Social Sciences	782	786	854	857	885	13%
<i>History</i>	48	48	56	58	63	21%
<i>Political Science</i>	221	221	222	195	201	-9%
<i>Psychology</i>	269	268	304	332	348	29%
<i>Social Sciences</i>	168	173	187	186	177	5%
<i>Sociology</i>	76	76	85	86	96	26%
TOTAL	4,176	4,225	4,365	4,353	4,348	4%

Table 3.6.5 Enrollment of incoming students by department (bold) and program in the College of Arts and Sciences for the last five years.

Department and program	1995-96	1996-97	1997-98	1998-99	1999-00	Increase 1995-00
Biology	339	304	309	267	262	-23%
<i>Biology</i>	169	178	212	169	147	-13%
<i>Industrial Microbiology</i>	45	40	44	29	42	-7%
<i>Pre-Medicine</i>	125	86	53	69	73	-42%
Chemistry	93	115	45	58	70	-25%
Economics	10	15	15	22	27	90%
English	7	22	17	16	12	71%
Geology	10	26	19	28	34	40%
Hispanic Studies	7	5	8	7	10	43%
Humanities	35	34	30	48	34	-3%
<i>Comparative Literature</i>	2	2	3	2	1	-50%
<i>French</i>	7	4	4	2	4	-43%
<i>Philosophy</i>	7	4	6	7	8	14%
<i>Plastic Arts</i>	14	24	15	35	16	14%
<i>Theory of Art</i>	5	0	2	2	5	0%
Industrial Biotechnology	29	24	17	12	26	-10%
Mathematics	110	162	122	129	104	-5%
<i>Computer Science</i>	54	73	60	57	48	-11%
<i>Mathematical Education</i>	10	21	23	20	21	110%
<i>Pure Mathematics</i>	46	68	39	52	35	-24%
Nursing	46	56	63	47	44	-4%
<i>Bachelor</i>	35	49	57	47	44	26%
<i>Associate</i>	11	7	6	0	0	N/A
Physical Education	51	51	60	56	75	47%
<i>Coaching</i>					30	N/A
<i>Teaching</i>					30	N/A
<i>Recreational</i>					15	N/A
Physics	50	79	56	66	66	32%
<i>Physical Sciences</i>	36	55	45	56	46	28%
<i>Physics</i>	14	24	11	10	20	43%
Social Sciences	179	187	198	194	199	17%
<i>History</i>	11	12	8	16	12	9%
<i>Political Science</i>	54	52	49	41	54	0%
<i>Psychology</i>	54	60	77	64	63	17%
<i>Social Sciences</i>	46	40	41	53	43	-7%
<i>Sociology</i>	14	23	23	20	27	93%
TOTAL	966	1,080	959	950	919	-5%

Table 3.6.6 Graduate enrollment in the College of Arts and Sciences by department and program increase 1995-96 to 1999-00.

Department	1995-96	1996-97	1997-98	1998-99	1999-00	Increase 1994-99
Biology	57	57	62	64	53	-7%
Chemistry	59	59	60	62	81	37%
English	30	30	36	40	30	0%
Geology	7	7	16	18	8	14%
Hispanic Studies	23	23	31	27	35	52%
Marine Sciences	75	75	85	83	79	5%
MS	41	41	46	45	38	-7%
Ph.D.	34	34	39	38	41	20%
Mathematics	16	16	10	16	27	69%
Computer Science (Ph.D.)	5	5	2	4	4	-20%
Applied Mathematics (MS)	3	3	4	6	7	33%
Pure Mathematics (MS)	1	1	0	4	7	700%
Statistics (MS)	7	7	4	2	9	28%
Physics	32	32	34	31	37	16%
TOTAL	299	299	334	341	350	17%

3.6.4.1 Faculty Preparation and Development

At the end of academic year 1999-2000, approximately 60% of the active faculty (tenured and non tenured) had earned doctorates, an increase in 4% since 1995-96 (Table 3.6.7). As enrollment in graduate programs increases and new doctoral programs are established, the percentage of professors with doctorates needs to grow. To assess if the percentage of professors with doctorates reflects past events or current hires, we examined the distribution of faculty members by rank in academic years 1995-96 and 1999-2000 (Table 3.6.8). The data show that the percentage of Instructors increased from 12.3% to 17.2% during the last five years. Most of these faculty, many of whom have a Master's degree, are hired on a temporary basis, in order to be able to supply all the instructors needed according to the demand for courses, especially basic and laboratory courses. Some of the decline in the percentage of Assistant Professors also reflects promotion of faculty to Associate rank during the last five years. One way in which this situation has been addressed is by providing the adequate conditions for potential faculty to earn their PhD degrees. During the years 1995-96 and 1997-98, more than 17 faculty members from the departments of Biology, Humanities, Social Sciences, Marine Sciences, Physics, English, Mathematics, and Chemistry received leave with financial assistance to pursue graduate studies.

Table 3.6.7 Preparation of active faculty in the College of Arts and Sciences by department for the period 1995-96 to 1999-00.

Department	1995-96			1995-97			1997-98			1998-99			1999-00		
	Ph.D.	MS/MA	BS/BA	Ph.D.	MS/MA	BS/BA	Ph.D.	MS/MA	BS/BA	PhD	MS/MA	BS/BA	Ph.D.	MS/MA	BS/BA
Biology	27(63%)	16	0	27	17	0	26	17	0	26	18	0	29(60%)	19	0
Chemistry	29(64%)	16	0	24	14	0	31	19	0	33	25	0	34(59%)	24	0
Economics	8(61%)	5	0	8	3	0	9	6	0	7	5	0	8(57%)	6	0
English	19(43%)	25	0	17	23	0	20	28	0	22	29	0	21(46%)	25	0
Geology	7(87%)	1	0	7	1	0	9	1	0	10	2	0	11(100%)	0	0
Hispanic Studies	15(47%)	17	0	19	8	0	22	13	0	20	10	0	21(70%)	9	0
Humanities	24(56%)	19	0	20	11	0	29	19	0	30	20	1	32(64%)	17	1
Marine Sciences	21(5%)	3	0	21	3	0	21	3	0	21	3	0	22(88%)	3	0
Mathematics	35(73%)	13	0	33	17	0	39	17	0	42	14	0	37(70%)	15	1
Nursing	2(9%)	21	0	3	18	0	2	19	0	2	19	0	2(9%)	20	0
Physical Education	8(33%)	15	1	8	13	1	8	13	1	8	17	1	9(35%)	16	1
Physics	21(91%)	2	0	22	2	0	25	5	0	25	4	0	26(90%)	3	0
Social Sciences	20(50%)	20	0	23	14	0	30	16	0	31	15	0	30(67%)	15	0
TOTAL	236(58%)	173	1	232	134	1	271	176	1	277	181	2	282(60%)	172	3

Table 3.6.8 Distribution of active faculty by rank for 1995-96 and 1999-00.

Department	1995-96				1999-00			
	Inst.	Asst. Prof./Res.	Assoc. Prof./Res.	Full Prof.	Inst.	Asst. Prof./Res.	Assoc. Prof./Res.	Full Prof.
Biology	14	7	7	15	14	4	12	18
Chemistry	16	5	10	14	13	11	11	23
Economics	0	3	5	3	5	1	2	6
English	6	11	10	8	12	11	13	10
Geology	1	1	3	2	0	3	2	6
Hispanic Studies	2	6	5	9	2	7	7	14
Humanities	3	11	6	19	7	14	5	24
Marine Sciences	0	3	9	12	0	0	4	18
Mathematics	4	11	15	18	5	8	15	25
Nursing	4	5	5	9	9	2	7	4
Physical Education	1	3	13	5	3	1	9	13
Physics	0	3	6	12	2	5	5	17
Social Sciences	6	13	13	8	10	9	13	13
TOTAL	57	82	107	134	82	76	105	191
Biology	32%	16%	16%	34%	29%	8%	25%	38%
Chemistry	36%	11%	22%	31%	22%	19%	19%	40%
Economics	0%	27%	45%	27%	36%	7%	14%	43%
English	17%	31%	28%	26%	26%	24%	28%	22%
Geology	14%	14%	43%	28%	0%	27%	18%	55%
Hispanic Studies	9%	27%	23%	41%	7%	23%	23%	47%
Humanities	8%	28%	15%	49%	14%	28%	10%	48%
Marine Sciences	0%	12%	38%	50%	0%	0%	18%	82%
Mathematics	8%	23%	31%	38%	9%	15%	28%	47%
Nursing	17%	22%	22%	39%	41%	9%	32%	18%
Physical Education	5%	14%	62%	24%	12%	4%	35%	50%
Physics	0%	14%	28%	57%	7%	17%	17%	59%
Social Sciences	15%	32%	32%	21%	22%	20%	29%	29%
TOTAL	12.3%	20.7%	31.2%	35.8%	17.2%	15.5%	22.8%	44.5%

3.6.4.2 Faculty recruitment

Faculty recruitment varies according to the nature of each department. During the first semester of academic year 1999-2000, a new Recruitment Plan was established. Although the plan outlines procedures for recruitment, it does not provide information about the priorities and criteria for allocation of new faculty positions between the departments.

MSA RECOMMENDATION

"Given the high teaching load, the Mathematics Department appeared to be somewhat understaffed, having not acquired young faculty as effectively as some other departments, such as Chemistry."

Table 3.6.9 shows the percentage increase in active faculty for each department since 1994-1995. The percentage increase for Mathematics was smaller than for other departments that offer service courses, such as Biology, Chemistry, English, Hispanic Studies, Humanities, Physical

Education, Physics, and Social Sciences. A small increase in enrollment and a relatively high increase in the number of faculty members occurred because more professors are needed to teach service courses, that is, courses taught to students in other faculties. This increased number of students are not counted as enrollment in the CAS, but efforts are always made in order to fulfill the demand for these courses. Table 3.6.10 shows the tenured faculty over this period.

Table 3.6.9 Number of active faculty in the College of Arts and Sciences by department for period 1995-96 to 1999-00. "active" = tenured, tenure track, and temporary faculty members.

Department	1995-96	1996-97	1997-98	1998-99	1999-00	Increase 1995-00
<i>Biology</i>	34	43	44	44	48	41%
<i>Chemistry</i>	38	55	60	58	58	53%
<i>Economics</i>	11	13	15	12	14	27%
<i>English</i>	40	44	48	51	46	15%
<i>Geology</i>	8	8	10	12	11	37%
<i>Hispanic Studies</i>	27	32	35	30	30	11%
<i>Humanities</i>	31	43	48	51	50	61%
<i>Marine Sciences</i>	24	24	24	24	25	4%
<i>Mathematics</i>	50	48	56	56	53	6%
<i>Nursing</i>	21	23	21	21	22	5%
<i>Physical Education</i>	22	24	22	26	26	18%
<i>Physics</i>	24	26	30	29	29	21%
<i>Social Sciences</i>	37	40	46	46	45	22%
Total	367	423	459	460	457	24%

Table 3.6.10 Tenured faculty at the College of Arts and Sciences

Department	1995-96	1996-97	1997-98	1998-99	1999-00	Increase 95-00
<i>Biology</i>	24	26	28	29	28	17%
<i>Chemistry</i>	24	25	27	30	30	25%
<i>Economics</i>	8	9	7	7	6	-25%
<i>English</i>	27	26	27	27	28	4%
<i>Geology</i>	9	3	12	11	6	-33%
<i>Hispanic Studies</i>	20	17	18	22	22	10%
<i>Humanities</i>	26	26	26	27	27	4%
<i>Marine Sciences</i>	16	19	18	23	22	37%
<i>Mathematics</i>	34	38	40	40	42	24%
<i>Nursing</i>	22	16	12	13	13	-41%
<i>Physical Education</i>	20	21	22	22	23	15%
<i>Physics</i>	22	23	23	21	19	-14%
<i>Social Sciences</i>	27	26	26	28	26	-4%
Total	279	275	286	300	292	5%

3.6.4.3 Faculty Academic Loads

The analysis of academic loads for the faculty shows that the percent devoted to teaching Mathematics is approximately equivalent to that for Biology and Chemistry and below that for

English, Hispanic Studies, Humanities, Physical Education, and Social Sciences (Table 3.6.11). The 1999-00 administration's response to this issue was that: "when viewed from this perspective, the situation in Mathematics is analogous to that of the science departments that provide service courses and that a problem arises when several faculty members, who are active researchers, require release time to pursue their projects because the result is that remaining faculty acquire overloads to accommodate the teaching demand.". The compositions of the departments should allow for development of the research component. The situation is not limited to the Mathematics department. It is a major challenge in departments where junior faculty are trying to develop their lines of research and this includes the sciences as well as humanities, social sciences and other arts departments. Table 3.6.12 shows how the number of credits in compensations (courses offered by a professor beyond the 12 credit workload) increased during the last five years to accommodate for the demand. The number of 1,345.5 credits in compensations. This is equivalent to 112 professors with full teaching loads through additional compensations. The number of additional compensations has been particularly high in the Mathematics and the Social Sciences Departments (203 and 215 credits in compensations respectively). Table 3.6.13 shows how the number of temporary contracts also increased during the last five years. Those two options, compensations and temporary appointments, have become the main strategies in the CAS to overcome the increased demand without adequate budget to hire all the faculty needed. Additional positions are necessary to prevent academic overloads and to allow for the development of the research components in all the departments. The College should consider the average size of the sections being taught, the teaching loads and the research potential and productivity of the programs when making decisions for the allocation of new faculty positions among departments. Different temporary options and incentives for a fast strengthening of the research component should be implemented. MSA recommendations on how to deal with this issue be welcomed.

The greater enrollment in the institution has placed additional pressures on the CAS, and teaching continues to be a higher percentage of the academic load. In addition, the somehow different academic background of the entering students has required the development of remedial

courses, including INGL 0066, INGL 0067, and MATE 0066, with small class sizes, but large enrollments, resulting in a greater demand for faculty. During the first semester of 1999-2000, 10, 9, and 18 sections of INGL 0066, INGL 0067, and MATE 0066, were taught, respectively. This is the equivalent of 4.75 full-time faculty members in English and 4.5 full-time faculty members in Mathematics. The statistics also show that, during the second semester of 1999-2000, teaching constituted 87% or more of the academic load in the Faculty, whereas it was 89% during that same period in 1995-96. Also, many faculty members are teaching courses ad-honorem, particularly in the mathematics (remedial courses) and the social sciences department (the courses of independent research by teams of students).

Table 3.6.11 Academic load in the College of Arts and Sciences by department for 1995-96 and 1999-00, all numbers are percentages.

Department	First semester, 1995-1996				Second semester, 1995-96			
	Research	Admin	Other	Teaching	Research	Admin	Other	Teaching
<i>Biology</i>	8	8	6	77	7	8	7	79
<i>Chemistry</i>	8	4	3	83	9	4	2	84
<i>Economics</i>	4	4	0	91	0	2	0	98
<i>English</i>	1	2	4	93	0	2	2	95
<i>Geology</i>	6	7	1	83	8	7	4	81
<i>Hispanic Studies</i>	4	1	3	92	2	1	3	94
<i>Humanities</i>	4	1	0	93	1	1	0	98
<i>Marine Sciences</i>	41	3	0	58	23	4	0	72
<i>Mathematics</i>	11	0	2	86	10	2	1	87
<i>Nursing</i>	0	4	0	96	0	3	0	96
<i>Physical Education</i>	0	8	0	91	0	7	0	93
<i>Physics</i>	14	1	3	81	12	4	3	81
<i>Social Sciences</i>	4	3	0	93	3	3	0	93
TOTAL	8	3	2	86	6	4	2	89
Department	First semester, 1999-00				Second semester, 1999-00			
	Research	Admin	Other	Teaching	Research	Admin	Other	Teaching
<i>Biology</i>	6	5	1	82	6	6	3	83
<i>Chemistry</i>	6	5	0	88	6	6	0	88
<i>Economics</i>	2	3	0	95	2	3	0	95
<i>English</i>	0	2	0	97	1	2	0	98
<i>Geology</i>	15	5	0	80	8	1	0	99
<i>Hispanic Studies</i>	0	5	0	94	2	4	0	95
<i>Humanities</i>	1	5	0	94	0	3	0	95
<i>Marine Sciences</i>	41	9	0	48	44	10	0	51
<i>Mathematics</i>	6	4	0	90	7	7	0	88
<i>Nursing</i>	2	2	0	96	2	4	0	96
<i>Physical Educ.</i>	0	7	0	93	0	8	0	92
<i>Physics</i>	19	7	0	74	19	6	0	73
<i>Social Sciences</i>	1	7	0	92	2	5	0	94
TOTAL	7	5	0	87	7	5	0	87

Table 3.6.12 CREDITS TAUGHT AS COMPENSATIONS (over regular load)

Department	1994-95	1996-97	1997-98	1998-99	1999-2000
<i>Biology</i>	51	67	52.5	72.5	82.5
<i>Social Sciences</i>	125	128	174	174	215
<i>Economy</i>	48	57	63	225	81
<i>Physical Education</i>	48	92	69	99	88
<i>Nursing</i>	82	79	62	65	97
<i>Hispanic Studies</i>	48	117	65	72	95
<i>Physics</i>	29	16	18	29	56
<i>Geology</i>	--	--	5	12	16
<i>Humanities</i>	110	148	127	132	139
<i>English</i>	51	72	122	107	107
<i>Mathematics</i>	132	116	83	189	203
<i>Chemistry</i>	161	143	196	166	166
TOTAL	885	1,035	1,036.5	1,342.5	1,345.5

TABLE 3.6.13 NUMBER OF TEMPORARY CONTRACTS IN THE COLLEGE OF ARTS AND SCIENCES .

Departments	1995-96	1996-97	1997-98	1998-99	1999-2000
<i>Biology</i>	2	7	8	3	3
<i>Chemistry</i>	7	12	15	7	4.5
<i>Economics</i>	1	2	1	3	1.5
<i>English</i>	7	6	8	7	3.5
<i>Geology</i>	--	1	1	1	--
<i>Hispanic Studies</i>	4	6	8	1	1
<i>Humanities</i>	4	10	8	5.5	3.5
<i>Marine Sciences</i>	--	1	--	--	--
<i>Mathematics</i>	4	7	6	3.5	3.5
<i>Nursing</i>	2	5	2	2	--
<i>Physical Education</i>	--	--	1	--	--
<i>Physics</i>	1	4	5	2.5	2
<i>Social Sciences</i>	4	5	6	4.5	3.5
Total	36	66	69	40	26

3.6.4.4 Faculty evaluation

Promotion and evaluation criteria for faculty at UPRM are defined by Certification 83-84-476 of the Administrative Board of UPRM. These criteria have been implemented in all departments in the CAS during the past three years. In addition, the Manual of University Rules and Regulations, which is distributed to all faculty, outlines the process of promotion and evaluation and provides specific guidelines. In most departments, new faculty members meet with either the Department Director or the Chair of the Department Personnel Committee for orientation. Student evaluations of

all faculty are conducted every semester. Tenure track faculty are evaluated annually. Tenured faculty eligible for promotion are also evaluated by the personnel committee.

To examine whether existing evaluation criteria are barriers to career success, the number of faculty who applied for tenure, promotion, and sabbatical leave between 1995-96 and 1999-2000 was compared with the number who were successful in their requests (Table 3.6.14). The data show that promotion rates have doubled, whereas tenure rates have dropped in half in the academic year 1999-00. The percentage of sabbatical leaves have increased a modest 4%. Future analysis should evaluate if there are differences between promotions on the three ranks. In spite of MSA recommendations to consider the teaching loads in the decisions for tenure, something happened during the most recent academic year so that an incredibly high number of applications for tenure were denied. A number of faculty who were denied tenure have filed for appeal to the Administrative Board, so a final percentage of tenured faculty during the 1999-2000 year cannot be provided at this time.

Table 3.6.14 Number of applications and awards; promotion, tenure, and sabbaticals in the CAS, 1994-99.

Type	1995-96			1996-97		1997-98		1998-99		1999-00		
	Applied	Approved	%	Applied	Approved	Applied	Approved	Applied	Approved	Applied	Approved	%
Promotion	58	21	36%	63	47	63	43	44	39	25	22	88%
Tenure	20	19	95%	15	15	20	20	8	8	47	23	49%
Sabbatical	15	10	67%	11	11	13	12	8	7	7	5	71%
Total	93	50	54%	89	73	96	75	60	54	79	50	63%

MSA RECOMMENDATION

"Since the faculty in Humanities and the Social Sciences are engaged primarily in classroom teaching, with less release time for research than is true of other areas, policies regarding faculty tenure and promotion should reflect these realities and should reward meritorious teaching and teaching effectiveness."

"Faculty evaluations should be better monitored and routinely instituted."

UPRM RESPONSE

The promotion and evaluation process has long garnered criticism within UPRM. In 1996 an Ad-Hoc Committee reporting to the Dean of Academic Affairs initiated a revision of the faculty evaluation process and consultants were hired for that purpose. The process was interrupted by administrative changes and the work was reinitiated in 1999. Building upon the work of previous committees, an Ad Hoc University Committee that reports to the Chancellor has conducted a review of the process and recommended that it be changed entirely. Proposed actions include the development of new and validated modules for peer and student evaluations. On the other hand, the mechanisms for evaluating based on the percentage of teaching versus research load for a faculty member are already established.

In response to the specific concerns by MSA, the 1999-2000 administration indicated that Nursing has defined its research expectations and strengthened its ties to the Research and Development Center in an effort to promote research within the department and that several Nursing faculty members are currently engaged in research projects. However, no comments were made about faculty evaluations in the Departments of Social Sciences, Humanities, and others. The issue requires further attention and deep analysis because there has been a significant increase in research endeavors in many departments (i.e., the Departments of Biology, Physics, and Social Sciences).

MSA RECOMMENDATION

"The MSN degree program, while attractive to local B.S. nurses_would require a faculty with a much higher PhD composition_we suggest that an assessment of need for such a program be conducted, that total resources necessary for the program be defined, and that the commitment of the university administration be obtained."

UPRM RESPONSE

A memorandum of understanding was created between UPRM and the Medical Sciences Department of the UPR that resulted in the initiation of a Master of Science in Nursing (MSN) program at UPRM in August, 1998. Two options of the MSN Program of the Medical Sciences Campus are offered at UPRM. The resources of the two institutions, therefore, are combined and

not duplicated. Distance learning is used to offer courses from the Medical Sciences campus when resources are not available in Mayagüez. The agreement states that Medical Sciences personnel will teach at Mayagüez when necessary. No data is available about further evaluations of resources needed for recruitment of more faculty with Ph.Ds. The number of professors in the Nursing Department at UPRM with doctoral degrees continues to be the same that it was in 1994-1995. The Department should evaluate the recruitment plans and make sure that there is a way to increase that number in the near future in order to insure the quality of the Master's program. A thorough and timely evaluation of the first years of the implementation of the graduate program will be started during the Fall 2001. A large part of this evaluation will be carried out by the staff of the UPR-Medical Sciences Campus.

3.6.5 UNDERGRADUATE PROGRAMS

MSA RECOMMENDATION

"Several undergraduate degree programs require excessive effort by the student for timely completion."

UPRM RESPONSE

Many students are taking too long to finish their undergraduate degrees. The impact of students remaining beyond four years coupled with entering students who require remedial education is significant. We examined the number of years required for completion of a degree for the students who graduated in 2000 (Table 3.6.15). If we assume a 56% attrition rate, the percentage of those who do not finish in four years is 69%. Attrition rates, therefore, have fallen during the last five years but remain high. Failure of students to graduate in four years has a significant impact on the CAS. Further analysis of the barriers to retention and progress in the curriculum should be facilitated with studies from the Office of Institutional Research based on specific cohorts followed over time and the administration and analysis of student questionnaires which would provide a profile of their work, values, and living conditions.

On the other hand, the Office of the Dean recognizes the efforts of the Department of Mathematics in this area. A group of Faculty led by the department head scheduled a meeting with

Departments heads of other institutions, both public and private, to discuss the academic background of students entering college, especially in mathematics. Among other things, it was concluded that the Department of Education should make a greater effort to improve the mathematical skills of students entering college should be made. A copy of the recommendation was sent to the Secretary of Education.

The gatekeeper courses are among the main barriers to graduation. In our 1995 self-study, we identified 10 required courses whose failure rates were greater than 25% during the first semester of 1991-92. Of these 12, the four in Mathematics had failure rates of 45% to 53% and a combined enrollment of 5,699 students. Approximately 2,500 students, therefore, must repeat these courses at some later point during their undergraduate studies. Because the four mathematics courses are part of a sequence, the implication is that many students fail the first course, eventually pass, and then proceed to fail the next course. Mathematics implemented a tutoring workshop where students could receive help outside classroom hours to reduce the number of failures. The size of sections also was kept small to encourage more one-on-one faculty-student interaction.

Table 3.6.15 Degrees conferred within the CAS, by department and program, 1995-96 and 1999-00.

Department and Program	Undergraduate			Graduate		
	1995-96	1999-00	Increase 1995-00	1995-96	1999-00	Increase 1995-00
Biology	218	239	10%	21	11	-48%
<i>Biology</i>	139	150	8%	21	11	-48%
<i>Industrial Microbiology</i>	38	51	34%	N/A	N/A	N/A
<i>Pre-Medicine</i>	41	38	-8%	N/A	N/A	N/A
Chemistry	52	70	35%	13	18	38%
Economics	15	5	-77%	N/A	N/A	N/A
English	7	13	86%	7	8	14%
Geology	4	13	25%	N/A	3	New program
Hispanic Studies	5	8	60%	0	2	100%
Humanities	43	40	- 7%	N/A	N/A	N/A
<i>Comparative Literature</i>	2	4	200%	N/A	N/A	N/A
<i>French</i>	6	3	-50%	N/A	N/A	N/A
<i>Philosophy</i>	5	6	2%	N/A	N/A	N/A
<i>Plastic Arts</i>	22	14	-37%	N/A	N/A	N/A
<i>Theory of Art</i>	8	1	-12%	N/A	N/A	N/A
Industrial Biotechnology	2	10	50%	N/A	N/A	N/A
Marine Sciences	N/A	N/A	N/A	11	15	36%
<i>MS</i>	N/A	N/A	N/A	8	11	37%
<i>PhD</i>	N/A	N/A	N/A	3	4	33%
Mathematics	38	25	- 4%	2	6	300%
<i>Computer Science</i>	22	20	-9%	1	1	100%
<i>Mathematical Education</i>	3	4	33%	N/A	N/A	N/A
<i>Pure Mathematics</i>	13	1	-8%	0	2	100%
<i>Applied Mathematics</i>	N/A	N/A	N/A	0	1	100%
<i>Statistics</i>	N/A	N/A	N/A	1	2	50%
Nursing	50	32	-36%	N/A	N/A	N/A
<i>Bachelor</i>	42	28	-33%	N/A	N/A	N/A
<i>Associate</i>	8	4	-50%	N/A	N/A	N/A
Physical Education	25	20	-20%	N/A	N/A	N/A
<i>Physical Educ (Teaching)</i>	0	8	100%	N/A	N/A	N/A
<i>Physical Educ (Recreational)</i>	0	1	100%	N/A	N/A	N/A
Physics	18	14	-32%	8	10	25%
<i>Physical Sciences</i>	7	6	-14%	N/A	N/A	N/A
<i>Physics</i>	11	8	-37%	8	10	25%
Social Sciences	125	155	24%	N/A	N/A	N/A
<i>History</i>	7	10	43%	N/A	N/A	N/A
<i>History of the Americas</i>	0	N/A	Eliminated	N/A	N/A	N/A
<i>Political Science</i>	28	42	50%	N/A	N/A	N/A
<i>Psychology</i>	57	68	19%	N/A	N/A	N/A
<i>Social Sciences</i>	19	23	21%	N/A	N/A	N/A
<i>Sociology</i>	14	12	-14%	N/A	N/A	N/A
TOTAL	602	641	6%	42	62	48%

To assess if improvement has occurred, we looked at the failure rate in these ten courses during the second semester 1999-2000 (Table 3.6.16). Improvement was shown in all courses except the Pre-calculus sequence. Failure rates in MATE 3171 (Pre-calculus I) have increased

significantly (+10.5%), whereas the failure rate in MATE 3172 (Pre-calculus II) fell by 12.4%. Another study undertaken in Mathematics demonstrated that 40% of science majors and 75% of arts majors failed MATE 3171. Because MATE 3171 is required of all CAS students, this has had a major impact on students' progression through their programs. Failure rates for the remaining courses listed in Table 3.6.16 have decreased from previous high levels in 1991-92. Increases in failure rates could be affected by a change in the formula of the admission index for the 1995-96 entering class giving greater weight to the high school GPA than to College Board scores. Several departments have analyzed the impact of the change in the admission index by tracking individual performance. Chemistry, Mathematics, and Physics noted that students who entered after the change have lower University GPAs and are more at risk for failure than their counterparts who had the same admission index (calculated using the old system) and entered prior to the change. The effect is greatest for those whose admission index is near the minimum acceptable for a department. Further analysis shows a correlation between College Board scores, particularly in mathematics, and the GPA at UPRM. Because the weight of the College Board in the calculation of the admission index was reduced, the admission index is not as accurate at predicting future success as it was prior to the change.

Table 3.6.16 Courses with high failure rates in the College of Arts and Sciences. Data are from the second semester 1999-00.

Course	1999-00			1991-92
	Total student enrollment	Number of failures and withdrawals	Failures and withdrawals 100%	Failures and withdrawals 100%
MATE 3171	806	489	60.6%	50.1%
MATE 3172	922	306	33.1%	45.5%
MATE 3021	114	36	31.5%	46.6%
MATE 3022	166	46	27.7%	52.9%
CISO 3121	197	53	26.9%	23.3%
CISO 3122	1209	153	12.6%	25.9%
HUMA 3111	597	118	19.7%	35.8%
FISI 3151	76	29	38.1%	37.5%
FISI 3152	237	25	10.5%	69.8%

To address the problem of lack of adequate preparation among entering students, Mathematics created a remedial course, MATE 0066, for which the student receives no credit. A student is placed in this course on the basis of a diagnostic test administered before the semester begins. The course was taught for the first time in 1999-2000. Enrollment was 500 students. The success of the course in reducing failure in the more advanced courses, therefore, has yet to be measured. The Mathematics Department estimates that the same number of students will be placed in MATE 0066 in first semester 2000-2001. No information is available about evaluations of the courses the MATE 3171 and MATE 3172. The Mathematics department is proposing the development of a course, "Mathematical Analysis" for Arts majors, to be taken instead of MATE 3171. It is important to evaluate the implications of lowering grading systems to have students passing courses and the range of implications of the development of special versions of special courses (i.e., stigmatization, transfers and equivalencies of courses, comparison with remedial courses, etc.).

Since 1995-96, the CAS approved 185 new courses and 108 revisions to existing courses. During the past five years, little progress has been made toward the reduction of credits required for graduation. The curricula in the 1998-99 University catalog consist of a low of 132 credits in Physical Education to a high of 144 in Nursing. Programs in the Arts require an average of 134 credits for graduation, whereas, those in the Sciences mandate 141. These have not significantly changed from the requirements of 1995-96. Of these credit hours, 56 are requirements of the CAS. By maintaining a load of 18 hours, a student can graduate in eight semesters. However, the average number of credits that students take is 14.5. MSA recommended that Nursing consider strategies for addressing the sequence of clinical practice courses. In fact, their requirements for graduation are the highest and therefore the department has initiated a revision of its baccalaureate program to change the sequence of clinical practical courses and to reduce the number of credits. Psychology, Physical Education, History, and Industrial Biotechnology have also revised their curricula since 1994-95 and some of those revisions included small reductions in the number of credits required for graduation. Efforts must be increased in this area. Curriculum Committee meetings occur once every month.

MSA RECOMMENDATION

"The idea of a core curriculum for the first two years of the undergraduate program should continue to be examined to promote better esprit de corps among students and unity among the faculty"

UPRM RESPONSE

An Ad Hoc Committee, composed of two members from the Arts and two from the Sciences, was convened to address the issue of evaluating the general education requirements. Their first task was to distribute a questionnaire to ascertain what basic skills and knowledge the faculty felt every student should have upon graduation from UPRM. The results of the questionnaire are now being evaluated. After analyzing the results, the Ad Hoc Committee will study if alternatives to the current general education requirements should be developed.

MSA RECOMMENDATION

"As the Humanities Department revises its curriculum, it should explore the possibility of accreditation by the National Association of Schools of Arts and Design and include desktop publishing, design, and imaging"

UPRM RESPONSE

The Humanities Department is already offering three courses in computer design and is already developing a fourth one. A Bachelor's degree has been developed in Industrial Design and is awaiting approval by the Academic Senate. The Department is beginning to evaluate the viability of affiliating to the National Association of Schools of Arts and Design in the near future.

MSA RECOMMENDATION

"The growing enrollment has increased class size, but urged reduction of class size in courses that teach writing skills and require essays". MSA also stated that more attention needed to be paid to deficiencies in student writing skills in English and Spanish."

UPRM RESPONSE

The Department of English introduced two remedial courses, INGL 0066 and INGL 0067, to address the lack of basic grammar and writing skills among entering students. It is still too early to determine if these efforts will be successful. However, it is important to begin an evaluation of

language and mathematics skills regardless of class grades. This is necessary to assess the assertion that there are language deficiencies and to identify the areas of deficiencies and make the necessary changes in the courses that deal with those areas of skills development.

MSA RECOMMENDATION

"While the team recognizes that there are considerable and perhaps competing needs within the university for new facilities and buildings, we also see that the facilities in biology are hindering the productivity and effectiveness of the department"

UPRM RESPONSE

A new facility for Biology was deemed essential. The new Biology building, now under construction, is scheduled for completion in the fall of 2002.

MSA RECOMMENDATION

"Office and classroom space was observed to be inadequate for departments in the fields of Humanities and Social Sciences."

Additional classroom space was made available by the completion of the Chemistry building. However, classroom space in the college is still inadequate and with increased enrollments, particularly in the Arts, the need for classroom space will continue to grow. A more thorough analysis of the available space and current demand is ongoing. New buildings have been developed for Chemistry and Biology and an old building was assigned to Mathematics. No plans have been presented to develop a facility for any of the Arts departments which all share the same deteriorated building (Chardón). However, a project is being discussed to renovate the Chardon building which will not add classroom or office space, but will at least update the current facilities which are used daily by more than 3,000 students every semester. Alternatives for relocation of some of the Arts departments who shared the Chardón building will be considered in the near future.

MSA RECOMMENDATION

"The lack of transportation to and from the clinical sites and lack of supplies at local hospitals need to be addressed for the nursing students."

UPRM RESPONSE

Three new vans were acquired by Nursing and are available for transportation of students to their clinical sites. The campus Transportation Office provides drivers and maintenance for the vehicles. The problem of lack of supplies in clinical practices has decreased during the last two years as the government privatized state hospitals. Professors, however, are given the necessary materials (e.g., gloves, soap, disposable towels, gowns, etc.) for clinical practices upon request.

3.6.6 RESEARCH

The MSA commended aspects of the research endeavours such as: (a) Biology, Chemistry, and Physics were commended for their abilities to meet student demands and provide research and scholarship opportunities; (b) the development of the Center for Applied Social Research in the Department of Social Sciences and their participation in the MOST Program; (c) the model that Marine Sciences provides to other departments on campus that wish to establish PhD programs, the high quality of its graduate offerings, publications, and ability to generate external funding, and (d) the prospects for success as an international department for Geology with the introduction of its new MS program.

MSA RECOMMENDATION

"The allocation of seed grants to faculty members for small research projects is applauded and financial support for faculty members is urgently needed, to travel to professional meetings and the continuation of one-year faculty sabbaticals"

UPRM RESPONSE

Data on research activities of the faculty are summarized in Tables 3.6.17, 3.6.18, and 3.6.19. Research is highly variable within the CAS. Some departments, particularly those in the fields of Humanities and Social Sciences, have high teaching loads, lack of administrative staff and poor library resources which makes the preparation of successful proposals a major challenge in terms of time and resources. In addition, many of the Science departments also have excessive teaching demands. Despite the constraints on their time, faculty members have devoted considerable effort to

research during the last five years. Most notably, the number of publications increased 28% from 243 in 1995-96 to 312 in 1999-2000 (Table 3.6.17). The number of proposals submitted also jumped from 74 to 99 during the same period. The proposal acceptance rate declined somewhat, but the reason for this is not straightforward. As the faculty becomes more successful, they may choose to submit to more competitive funding programs and agencies, thereby experiencing a lower acceptance rate. The amount of funding has remained fairly constant. Because many of the research activities in which the faculty participates are large, multidisciplinary projects with grant periods of five years, influx of funding can be sporadic. Comparison of funding from one year to the next, therefore, can be misleading.

Table 3.6.17 Summary of research activities for the CAS for the period 1995-2000

	1995-96	1996-97	1997-98	1999-00	Increase 1995-00
<i>Publications</i>	243	280	297	312	28%
<i>Proposals submitted</i>	74	96	99	99	34%
<i>Proposals funded</i>	51	39	40	61	20%
<i>% Proposals funded</i>	69%	41%	40%	62%	-11%
<i>Funds solicited</i>	16,827,137	26,637,494	28,277,338	27,341,222	62%
<i>Funds granted</i>	5,864,162	3,920,982	7,836,121	5,609,644	-4%
<i>% Funds granted</i>	35%	15%	28%	20%	%

Some of the large, externally funded programs in which the faculty participates include the National Institute of Health Minority Biomedical Research Support, the National Science Foundation Center for Research Excellence in Science and Technology, the NASA University Research Center, the MARC Scholars, and the Experimental Program to Stimulate Competitive Research (EPSCoR) Program in NSF, DOD, DOE, NASA, Howard Hughes, PR-LSAMP, and EPA.

For obvious reasons, the distribution of external funds by department shows that the Sciences dominate the Arts in generating research dollars (Table 3.6.18). Many of the Arts departments, however, have some research funding, despite their lack of release time and resources evidencing the intellectual vigor and potential of the faculty. The most productive department within the Arts is the Social Sciences Department which also conducts many research activities without

external funding and collaborates in interdisciplinary grants with engineers and faculty from the other colleges.

The CAS is committed to fostering research while meeting the demand for its courses. Although funding for seed money for projects has decreased during the last year (1999-2000) due to budgetary attrition, funding for travel to professional meetings to present research results increased between 1995-96 and 1999-2000 (Table 3.6.19). In addition, the CAS has supported sabbaticals for 53 of its professors during the last five years. One issue on which we have not made progress is that of release time. Unfortunately, within the current environment, two major impediments preclude widespread granting of release time: (1) budgetary constraints that prevent the allocation of additional tenure-track faculty slots for departments with excessive teaching demands, and (2) the length of time students require to complete their degrees. The latter accounts for the fact that enrollments are approximately 10-20% higher than they would be if students were finishing their undergraduate curricula within four years. We are optimistic about the future as enrollments stabilize and real budgetary growth returns to UPRM.

Table 3.6.18: Number of research projects and amount of external funds in the College of Arts and Sciences by department for the period 1995-96 to 1999-00. No distinction is made between projects for research and teaching.

Department	1995-96 Funds	1996-97 Funds	1997-98 Funds	1998-99 Funds	1999-00 Funds
<i>Biology</i>	\$1,407,972	\$820,383	\$280,940	\$951,513	\$289,067
<i>Chemistry</i>	\$3,856,885	\$2,118,784	\$3,084,410	\$4,410,595	\$1,002,035
<i>Economics</i>	\$9	\$0	\$0	\$0	\$0
<i>English</i>	\$29,981	\$0	\$5,600	\$0	\$0
<i>Geology</i>	\$3,601,970	\$3,223,706	\$2,583,648	\$2,970,631	\$721,750
<i>Hispanic Studies</i>	\$3	\$0	\$275,869	\$0	\$0
<i>Humanities</i>	\$27	\$18,996	\$258,840	\$79,000	\$4,000
<i>Marine Sciences</i>	\$5,268,746	\$3,647,965	\$1,514,300	\$2,884,593	\$3,315,494
<i>Mathematics</i>	\$1,900,671	\$959,769	\$1,492,629	\$1,792,000	\$1,173,866
<i>Nursing</i>	\$0	\$0	\$0	\$0	\$0
<i>Physical Education</i>	\$0	\$0	\$0	\$0	\$0
<i>Physics</i>	\$2,401,894	\$4,080,248	\$1,387,890	\$2,160,185	\$1,010,193
<i>Social Sciences</i>	\$39	\$46,670	\$567,990	\$90,626	\$101,061
TOTAL	\$18,468,197	\$14,916,521	\$11,452,116	\$15,339,143	\$7,617,466

Table 3.6.19: College of Arts and Sciences funds for faculty seed money projects and travel to professional meetings for the period 1995-96 to 1999-00.

Category	1995-96	1996-97	1997-98	1998-99	1999-00	% Increase
						1995-2000
<i>Proposals (Faculty Seed Money)</i>	\$65,304	\$79,748	\$60,027	\$66,127	\$43,479	-34%
<i>Professional Travel (Faculty)</i>	\$31,306	\$43,822	\$70,798	\$79,249	\$76,873	45%

3.6.7 GRADUATE PROGRAMS

MSA RECOMMENDATION

“The length of time required to complete a master’s degree in several departments of the CAS, including Biology, Chemistry, Marine Sciences, Mathematics, and Physics. Creation of a Graduate Student Senate was suggested.”

UPRM RESPONSE

Of the students who received their doctorate in 1998, 43% took seven years or longer. Issues that may affect the length of time of completion of degree, include frequency of graduate course offerings, graduate teaching loads, and TA/RA salaries.

Table 3.6.20: Length of time students who graduated in 1998 required to complete their master’s degrees.

Number of Years	Graduated in 1998
<i>Two years</i>	5.7%
<i>Three years</i>	17.3%
<i>Four years</i>	10%
<i>More than four years</i>	40%
<i>Unknown number of years</i>	17%

3.6.7.1 Frequency of Graduate Course Offerings

The current catalog lists the frequency with which graduate courses are offered, i.e., annually or during odd years or even years, permitting students to plan ahead. As in all universities, instances arise when courses may not be taught at the times specified. Departure of a faculty member from UPRM, for example, may result in not having qualified personnel to teach a specific course during a certain year. In addition, graduate courses have a minimum enrollment requirement of four students.

It is possible, therefore, that a student who has waited until an odd or even year for a specific course may have that course cancelled because of insufficient demand. The study plans of individual graduate students can be modified to substitute one course for another, subject to approval.

3.6.7.2 TA/RA Salaries

MSA RECOMMENDATION

“The discrepancy in teaching and research assistant salaries led to poor morale among graduate students. The accreditation team pointed out that this is not confined to one department but is a universal problem on campus.”

UPRM RESPONSE

Salaries for teaching assistants are set by the University. The CAS no longer provides funds for research assistants due to budgetary constraints and demands for teaching assistants in departments with large undergraduate enrollments and graduate programs. Before the 1999-2000 academic year, TA salaries for master’s and doctoral candidates were \$700 and \$850 per month for ten months, respectively. Salaries were increased for this academic year. Current TA salaries are \$917 per month for ten months for master’s students and \$1,057 per month for 10 months for doctoral students. A full teaching load for a teaching assistant is six credits; the required teaching load is three to nine credits per semester. The high number of nine credits is not encouraged. The salary is not distributed over the entire calendar year, so graduate students must budget or find additional funding during the summer. Many find graduate student support from external grants to faculty members for summer research.

3.6.7.3 Equipment Maintenance

MSA RECOMMENDATION

“The University does a reasonably good job of providing adequate research support services to the Marine Sciences graduate programs and Department, but several issues that impede research progress need to be addressed. These include improved response to maintenance requests, procurement of supplies and equipment, computer support services, continuity of action and processing of paperwork, grant administrative support, and better communication between Isla Magueyes and Mayagüez.”

UPRM RESPONSE

An Associate Director was appointed and a closer working relationship with the Research and Development Center. The MSA also recommended that funds be allocated for preparing and relocating the Marine Sciences library and the library has been relocated.

Although comments concerning research support were directed at a few departments, we note that many of the problems are common to all departments of the University in which research is conducted. In 1994, the Research and Development Center was created to support and promote research at UPRM. All externally- funded projects are managed through the Center, which administers grants from their submission to termination. The Director of the Center is the authorized university official for all external agencies. The Center is responsible for expenditures from external funds, including purchasing, hiring of short-term personnel, and travel. Most requisitions require only the signature of the Principal Investigator. Procurement generally is faster through the Center than through the Office of Purchasing for the University but not in all cases. Efficiency of University purchasing has improved with the implementation of the computerized Financial Record System (FRS). Extensive follow-up, however, is frequently necessary on the part of the researcher. Corporate American Express cards were issued to Principal Investigators in 1998 to minimize problems associated with delays for reimbursements, which were in excess of three months in many cases. The Center is currently undergoing restructuring and downsizing and the potential impact of those actions on the significant support that the Center has been able to provide to the researchers should be evaluated before the downsizing continues much further.

Equipment maintenance continues to be a problem. Many investigators have been successful in acquiring state-of-the-art instrumentation for both research and teaching. Neither the Departments nor the CAS, however, have funds in their annual budgets for service contracts. In some cases, the CAS does support service contracts, but this support was negotiated as part of the University's commitment to the external funding agency and was done prior to the purchase of the instrumentation. The cost of the service contract was added to the overall budget of the CAS by the Central Administration. In most cases, service contracts are the responsibility of the researcher(s)

who use the instrumentation. Computers purchased with University funds are an exception. If University funds are used, three-year, on-site warranties are required. Hardware bought through external funds is not subject to this regulation, and service contracts are at the discretion of the Principal Investigator.

The reduction in the residual budget for the CAS resulted in a decline in funds for maintenance of educational and research equipment (Table 3.6.21). The funds allocated in 1997-98 were 44% less than those spent in 1995-96. Fortunately, funding for maintenance increased in 1998-99 and 1999-00. Amounts spent on equipment repairs each year were roughly constant for the past four years.

Table 3.6.21: Funds spent on repair and maintenance of educational and research equipment in the College of Arts and Sciences for the period 1995-96 to 1999-2000.

	1995-96	1996-97	1997-98	1998-99	1999-00
<i>Repair</i>	\$108,717	\$96,204	\$108,750	\$105,336	\$108,305
<i>Maintenance</i>	\$261,952	\$192,008	\$146,240	\$173,165	\$206,188

The Department of Marine Sciences manages its own maintenance section for its Marine Laboratories and research vessels. The section normally has a supervisor who works closely with the Director and Associate Director of the Department, but this position is vacant. The maintenance budget has not suffered significant cuts, but the allocated number of personnel is not sufficient. The Department is seeking to add personnel for fleet maintenance. Responses to requests for maintenance at Isla Magueyes are adequate, but response on the main campus frequently takes over six months. Communication has greatly improved with the addition of a LAN and a server at Magueyes. All internal communication is done electronically.

The issue of technical support staff is a serious one affecting the entire campus. As education and research becomes more technologically advanced and computer driven, the need for qualified support personnel increases. The problem that UPRM faces is that salaries for technical staff are extremely low when compared to industry. (A technician typically earns less than \$20K per year.) In addition, no separate classification exists for technical versus clerical staff, making the evaluation and

promotion process difficult. Discussions are ongoing within the Office of the President to solve this problem.

3.6.8 ANALYSIS AND RECOMMENDATIONS

We present a series of issues that are ranked in order of their impact on the CAS. All issues, however, are significant.

Issue 1: The erosion of departmental discretionary budgets in the CAS is severely impacting education at UPRM. Funds for equipment, maintenance, and materials are inadequate in most departments.

Recommendation: The CAS budget needs to be increased and, at a minimum, restored to 1995-96 levels. All first- and second-year students take courses in the College and so the impact of a greater enrollment at UPRM is felt most significantly by the College. Unfortunately, the residual budgets of several departments have declined during the last five years.

Issue 2: The recruitment of new faculty members with doctoral degrees is imperative for the support of both undergraduate and graduate programs, whose enrollments are increasing. Funding for tenure-track faculty positions must be provided at sufficient levels to permit release time for those who are vigorous researchers and to prevent academic overloads.

Recommendation: The program of granting academic leave with financial assistance to pursue doctoral degrees must continue. Faculty who return from study leaves without completing their doctorates must be given the opportunity to do so. In addition, the new recruitment plan must be implemented. To attract new doctoral faculty, the University must be prepared to offer attractive start-up packages, including release time, funds for research, and competitive salaries. Those incentives have proven effective in the CE. Additional positions must be allocated to permit students to graduate in four years, thereby reducing teaching demands on the faculty.

Issue 3: The time required to complete undergraduate and graduate degrees is too long.

Recommendation: More efforts must be made to provide assistance to students at risk of failure. Academic counseling must be made more effective. As previously stated, curricula need to be modified to require fewer credits for graduation. The general education requirements must be revised. In addition, an in-depth study of the effect of the change in the formula for the admission index must be conducted within the CAS to determine if further modifications are necessary.

Issue 4: Limited office, teaching, and research space is hindering development of various programs and affecting the quality of undergraduate and graduate education. The construction of new buildings is expensive. Nevertheless, additional office, classroom, and laboratory space are required. The present Biology building with its 18,000 square feet of laboratory and classroom space, must remain as an academic building after the department moves into its new quarters in 2002.

Issue 5: Technical support for computer hardware and software, communication, and network management is essential.

Recommendation: Salaries must be raised for technical personnel. In addition, the classification of staff should be modified into two separate categories: clerical and technical, allowing each group of individuals to be evaluated based on their appropriate skills.

3.6.9 CONCLUSIONS

The CAS is fulfilling its mission and objectives as an institution dedicated to teaching, research, and service. The number of degrees conferred at the undergraduate level since 1994-95 has risen at a rate comparable to the increase in enrollment, demonstrating that the College remains as successful as it was before the higher student numbers of the past five years. The attrition rate has fallen by 5%. Work remains to be done, however, to lower the attrition rate further and to reduce the length of time students require to obtain degrees at both the undergraduate and graduate levels. Departments are responding by creating remedial courses, offering tutoring workshops, developing alternatives to traditional gatekeeper courses, and revising academic counseling. Despite higher teaching loads, faculty publications have increased since 1995-96. Service and outreach activities conducted by faculty are calculated to be in the hundreds per year. Student organizations are vibrant. The CAS, therefore, is maintaining its tradition of dedication and excellence to the community of Puerto Rico.

3.7 COLLEGE OF BUSINESS ADMINISTRATION: RESPONSE TO MSA 1995

3.7.1 INTRODUCTION

The College of Business Administration (CBA) at the UPRM was established by the Council of Higher Education in 1970. Its primary objective is the development of leaders in the field of business. With this objective in mind, the CBA directs its efforts towards achieving the following goals:

1. Familiarize students with the study of mankind, through the arts and sciences.
2. Development of the desire for the search of truth, among students.
3. Strengthening of the democratic form of government by emphasizing the need for businessmen to participate in governmental affairs.
4. Development of the student's abilities to solve business problems, by making available to them the knowledge concerning the operation of business enterprises.

As a second objective, the College seeks the development of research as it applies to business management. It hopes to provide business enterprises as well as government agencies with new techniques in the field. It has a favorable disposition to cooperate with the Government of Puerto Rico and the private industry in the development of research projects that pursue the aforesaid goals.

The CBA is interested in developing academic programs that are relevant to the needs of the Puerto Rican society. It is continuously taking steps to maintain good relations with business firms and governmental agencies to determine their needs for human resources so that new, as well as existing programs, can meet these demands.

The College offers a program of studies leading toward a Baccalaureate degree in Business Administration with options in Accounting, Computerized Information Systems, Finance, Industrial Management, Marketing, and Organizational Studies (Human Resources). It also offers a Bachelor's degree in Office Administration.

The curriculum is divided into the following three areas: general education, core courses in business administration, and professional recommended electives. The first two subject areas are more or less common to all majors, and the latter provides students with in-depth study of their selected area of specialization.

The program is designed around the basic idea that, at the undergraduate level, it is necessary to expose the student to as many areas of business as possible. Following this philosophy, the program requires between 65 and 68 credits in business core subjects. Each major is made up of a group of advanced subjects, which allows the student to gain proficiency in an area of his/her choice.

The following tables provide a general profile for the CBA, from the 1995-1996 to the 1999-2000 academic years. During the past five years, as Table 3.7.1 shows, the number of undergraduate students in the CBA decreased by 2% (see Table 3.5.1). This may be a result of the elimination of three degree options (e.g., Economics, Secretarial Sciences, and the Associate Degree in Secretarial Sciences). Undergraduate admissions also decreased, by 44%. Accounting, Computer Information Systems, and Industrial Management were the programs most affected by this reduction (see Table 3.7.2). This reduction in the number of students is a concern for the CBA and we will examine what factors contributed to this reduction. The number of degrees granted increased by 10%, from 306 in 1995-96 to 337 in 1999-2000, showing an improvement in our retention rates. Table 3.7.3 shows that the number of students in graduate programs remained fairly stable during the last five years. However, the degrees granted increased by 78%.

Table 3.7.1: General Overview of the CBA, 1995-2000

	1995- 1996	1996- 1997	1997-1998	1998-1999	1999-2000
<i>Undergraduate Students</i>	1881	1899	1866	1940	1849
<i>Undergraduate Admissions</i>	420	449	413	407	292
<i>Degrees Granted</i>	306	332	308	303	337
<i>Faculty Members*</i>	61	66	60	61	58

*Includes General Business Professors

Table 3.7.2: CBA Graduate School, 1995-2000

	1995- 1996	1996- 1997	1997- 1998	1998-1999	1999-2000
<i>Students</i>	82	82	89	94	81
<i>Degrees Granted</i>	14	19	15	22	25

Table 3.7.3: General Overview of the CBA, by Academic Programs, 1995-2000

	1995-96	1996-97	1997-98	1998-99	1999-2000
ACCOUNTING					
Undergraduate Students	485	503	452	441	394
Undergraduate Admissions	126	127	95	92	63
Degrees Granted	59	74	68	63	56
Faculty Members	11	11	9	10	9
COMPUTER INFORMATION SYSTEMS					
Undergraduate Students	316	359	384	408	405
Undergraduate Admissions	86	99	95	84	46
Degrees Granted	44	53	45	41	60
Faculty Members	9	10	8	10	9
FINANCE					
Undergraduate Students	199	206	188	207	187
Undergraduate Admissions	25	50	29	41	38
Degrees Granted	57	48	50	56	48
Faculty Members	7	8	8	7	7
INDUSTRIAL MANAGEMENT					
Undergraduate Students	302	306	296	301	292
Undergraduate Admissions	70	84	66	66	41
Degrees Granted	45	44	42	42	49
Faculty Members	7	7	7	7	5
MARKETING					
Undergraduate Students	108	179	187	203	182
Undergraduate Admissions	39	41	49	53	34
Degrees Granted	27	32	26	28	25
Faculty Members	6	6	6	6	4
ORGANIZATIONAL STUDIES					
Undergraduate Students	118	106	124	149	159
Undergraduate Admissions	16	10	29	31	24
Degrees Granted	36	38	38	35	42
Faculty Members	7	8	8	8	8
Undergraduate Students	63	150	211	215	224
OFFICE ADMINISTRATION					
Undergraduate Admissions	53	38	50	40	46
Degrees Granted	0	0	27	33	51
Faculty Members	7	8	8	7	8
ECONOMICS*					
Undergraduate Students	54	28	10	8	3
Undergraduate Admissions	1	-	-	-	-
Degrees Granted	5	9	3	1	3
Faculty Members**	-	-	-	-	-
ASSOCIATE DEGREE IN SECRETARIAL SCIENCES*					
Undergraduate Students	10	6	2	1	-
Undergraduate Admissions	4	-	-	-	-
Degrees Granted	2	2	-	1	-
Faculty Members***	-	-	-	-	-
Undergraduate Students	146	56	12	7	3
SECRETARIAL SCIENCES*					

Undergraduate Admissions*	-	-	-	-	-
Degrees Granted	31	32	9	3	3
Faculty Members***	-	-	-	-	-

* The Economics option, the Associate Degree in Secretarial Sciences, and the Secretarial Sciences Program were eliminated from the CBA.

** These professors are from the Economics Department, CAS.

*** These professors are from the Office Administration Program of the CBA.

3.7.2 COMPUTER SUPPORT AND INSTRUCTION

MSA RECOMMENDATIONS:

“Physical plant, computer facilities, computerized communication system and library resources were inadequate. However, architectural plans have been approved for a new building with adequate facilities. There is insufficient dissemination of computerized communication system such as Internet; usage is still limited.”

UPRM RESPONSE:

In response to the MSA recommendations regarding inadequate computing facilities, we have taken the following steps:

- The CBA submitted a proposal to Allstate Insurance, aimed at enhancing its computer centers and to upgrade the computers in all the academic laboratories. Part of this funding was assigned to the work and study program to extend the operating hours of the computer laboratories. Allstate Insurance donated \$27,000.00 in 1998-1999, which allowed improvement of the CBA information technology infrastructure. The improvements obtained include:
 - a substantial increase in the number of labs and classrooms equipped with computers and data displays. In 1995, the CBA had only two computer labs; in 2000 CBA, added six labs, with new and upgraded computers.
 - added one graduate research room with six computers and one faculty research room with three computers, two printers, and a scanner.
- In 1995, less than 50% of the faculty had desktop computers for research in their offices. In 2000, all faculty members have computers in their offices.
- In 1996, only one classroom had an installation to allow Internet access. By the end of 2000, every classroom had connection facilities to the Internet. Further, by the end of 2000, every computer in the CBA, including the administrative offices, had access to the Internet.

- In 1999, the College designed its first Web page for the benefit of students and the Faculty.
- The hardware has been updated and increased by changing servers from Novell 3.12 to Windows NT 4.1 and through the acquisition of laptops and data displays. In 1995, the CBA did not have laptops or data displays. By the end of 2000, there were four laptops and eight data displays, six of them in labs and classrooms. In 1999, CBA received twenty new computers from the Office of the President of the UPR.
- In 1995, the CBA did not have any hardware or software for distance learning, but by the end of 1999, it had acquired the necessary hardware, software, equipment, and faculty resources for this purpose.
- Distance learning is used in the Graduate Business Program and will be expanded in the near future. The Management Information Systems (MIS) course is currently taught using distance learning methodology and technology.

3.7.3 FACULTY

MSA RECOMMENDATIONS:

“Appropriate incentives need to be developed in order to attract Ph.D. faculty. A way should be found to allow some of the best and youngest faculty members with master’s degrees, to obtain a leave of absence with partial or total pay plus tuition and some expenses covered by school/Campus in order to obtain the Ph.D. in a mainland university.”

UPRM RESPONSE:

There has been no net increase in the number of Ph.D.’s in the CBA. However, the CBA has reactivated the policy of identifying and sending competent faculty members to complete their Ph.D.’s abroad. Currently, six faculty members are completing their Ph.D.’s in the United States, Spain, and the United Kingdom. In addition to these six, two additional professors are willing to begin their Ph.D. studies next year: one in Finance and the other in Quantitative Methods. However, despite our success in this area, we should point out that, in general, faculty members are hesitant to fulfill their desires to earn a Ph.D. degree for three main reasons: 1) the UPR provides poor economic assistance for faculty pursuing graduate degrees; 2) salaries for faculty with Ph.D.’s in Puerto Rico are not competitive. Further, Table 3.7.4 shows that the CBA faculty are at a significant

economic disadvantage when compared to their counterparts on the US mainland; 3) budget cutbacks and limitations through all the University system have hampered our recruiting efforts; and 4) high administrative turnover at the Dean’s level does not allow continuous follow-up on recruitment plans and other related initiatives.

Turnover among young faculty members is also a serious problem at the CBA. Since 1995, twelve professors left the CBA; 33% resigned and 17% ended their contracts. There are a variety of reasons that contribute to this high turnover including, low faculty wages, more attractive working conditions in the private sector, and stricter requirements for promotion and tenure at the CBA, which might include the completion of the Ph.D. degree, among others. In order to deal with these issues, the CBA has developed a faculty recruitment plan that will be implemented as soon as the budget constraints are solved or alleviated.

Table 3.7.4: Comparative Minimum Starting Salaries by Faculty Ranks: UPRM vs.USA Non-accredited* Public Universities (in 000’s)

RANK	1995-1996		1998-1999	
	UPRM	US	UPRM	US
Instructor	\$24.1	\$32.7	\$27.7	\$43.4
Assistant Professor	26.1	47.1	30.1	55.2
Associate Professor	30.3	52.4	34.9	61.3
Professor	35.0	60.5	40.3	69.6

*Average starting salary according to AACSB salary survey for public non-accredited universities.

3.7.4 UNDERGRADUATE PROGRAMS

MSA RECOMMENDATIONS:

“Program development and update takes too long (from four to twelve years, as in the case of the Secretarial Science program) because hierarchical levels, including the Board of Trustees of the University System, must approve new academic programs. It takes too many years to complete a degree (e.g., the bachelors degree takes an average of six years rather than the standard four).”

UPRM RESPONSE:

The length of program development and updating depends on the degree of control exercised by the College. Once the revision is submitted to the Dean of Academic Affairs, the CBA does not have any further control regarding its approval. For example, the administrative bureaucracy and the high turnover at the Dean's level is directly responsible for the fact that the present curriculum revision has taken twelve years, and it is still pending.

Administrative turnover at the college level is not voluntary; it primarily responds to the frequent changes at higher administrative levels. For example, since 1995, the CBA has had seven Deans, four of them as Acting Deans. There have also been five Chancellors in five years. These positions are highly vulnerable to political changes within the government. As long as we continue to exhibit this administrative instability, we will continue to confront serious academic, administrative, and budgetary difficulties and constraints.

Concerning the number of years required for graduation, we can highlight some observations:

- Physical and faculty resources are not used after 1:30pm at the UPRM. This means that the bulk of courses are offered between 7:00am and 1:30pm. This action limits the variety and number of courses that could be offered and it is detrimental for non-traditional students.
- The frequency of offering certain courses is very low due to the observation mentioned above and the limited number of faculty at the CBA. During the second semester, 1999-2000, 43% of the faculty had additional compensations for teaching extra courses.
- The student profile at the UPRM has changed. Currently, more students have full-time jobs or household responsibilities. Therefore, we have experienced an increase in the number of non-traditional students, which results in extending the time to complete a degree.
- In 1995, the CBA evaluated our required Math courses jointly with the Department of Mathematics to adapt them to the particular needs of our students. However, there has been no follow-up to this initiative because of the administrative turnover at the CBA. This action was aimed at addressing the high failure rate in mathematics courses and to search for plausible solutions to alleviate this problem. This remains an important issue, which warrants our immediate attention.

- Historically, the Accounting Principles courses have showed a high student failure rate. Therefore, the CBA implemented an experimental design that included tutorial modules within these courses. This experimental design resulted in a decrease of 30% in the failure rate. Accounting professors will phase-in the use of such techniques in their courses after we complete and analyze the second phase of this experiment with the CONT 3006 - Accounting Principles II courses.
- We must implement this same module concept in other courses with high failure rates such as Managerial Finance (FINA 3006) and Managerial Accounting (CONT 4006). However, the CBA needs a substantial increase in its human resources and budget to continue this project.
- Table 3.7.5 shows that between the periods of 1995 and 2000, the percent of undergraduate students taking five or more years to graduate increased from 47% in 1994-95 to 67% in 1999-2000. In 1999-2000, of the 67% that took more than four years to graduate, 64% took five years to graduate while the remaining 36% took more than five years to complete their degrees.

Table 3.7.5: Percentage of CBA undergraduate students graduating within five years or more, 1994-2000

Year	Percentage (%)
1994-1995	46.6
1995-1996	48.2
1996-1997	48.6
1997-1998	39.3
1998-1999	44.8
1999-2000	67.2

Concerning the time that students take to complete their degrees, a significant percent (22%) pursue a second option in the CBA, increasing the time required to complete their degrees compared to those who complete only one option. Historically, our students have been registering for an average of fifteen credits per semester when our curriculum requires a minimum of eighteen. This increases the time to complete our programs for, at least, one additional semester. Also, our programs are very attractive to students from other faculties and other universities that, as transfer students, will lose credits and will have to take additional credits, which will make them fall behind in our curriculum. These factors combined with the increase in the number of non-traditional students

contribute to increasing the time toward the degree in the CBA. The CBA will determine what factors account for the increasing number of undergraduate students that take five or more years to complete their degrees.

The implementation of the two summer sessions at the UPRM has been an effective tool for accelerating student graduation rates. We are also scheduling courses late in the afternoon and increasing the number of sections of some courses. We will continue to develop new strategies to reduce the time required for the completion of baccalaureate degrees in the CBA.

3.7.5 RESEARCH AND GRADUATE STUDY

MSA RECOMMENDATIONS:

“There is virtually no research output by the faculty, save for some applications oriented research. Additional information on incentives for research should be provided by the newly created Research Center at the Campus. Current criteria for promotion and tenure are not conducive to promoting research by the faculty.”

UPRM RESPONSE:

During the 1995-1996 and 1996-1997 academic years, the CBA established a program to support research in entrepreneurship among professors and students throughout the entire campus. The CBA faculty conducted some research during these two years in this area. Nevertheless, there has been a substantial decrease in research projects, primarily due to the heavy teaching loads among faculty. This situation is exacerbated by the high faculty turnover, the dearth of new full-time positions, and budget constraints. Regarding the graduate program, 99% of the students finish their MBA without a thesis, and this is the primary reason for the lack of graduate research.

During the past five years, the R&D Center sponsored three research projects through seed money funds. However, the R&D Center is now undergoing re-structuring and its future is uncertain. As mentioned previously, one of the CBA’s objectives is to encourage, promote, and increase research initiatives among our faculty. Although we have not been successful in this area, we will continue to work and to develop mechanisms to encourage faculty participation in research projects.

However, we also need the support of university administrators. Incentives must be implemented, particularly in the promotion and tenure process, to stimulate faculty participation in research initiatives.

3.7.6 CONCLUSIONS

The CBA has been working in the development of a Strategic Plan. Currently, we are in the process of submitting the Plan for faculty approval. In this Plan, the mission and objectives of the CBA have been redefined to include specific technological and global concerns. General faculty awareness regarding the mission and objectives of the CBA has improved because more faculty members have been actively involved in the strategic planning and development process.

Regarding infrastructure, budget and blueprints have already been approved for the construction of the new building, scheduled to start in May 2001. Technology infrastructure has improved substantially with the updating of the wiring system that was replaced with fiber optics. Therefore, each classroom, lab and faculty/administrative office has access to the Internet.

There has also been improvement in the success/failure rate in the Accounting Principles course by offering tutorials and having smaller sections. This has allowed the enhancement of effective study habits among students. Since Internet is now accessible through the College network, students now have better access to information to increase and enhance their research initiatives.

Student associations are still very active at the CBA and some have won special recognitions as best student chapters nationwide. The CBA has been continuously involved in the process of curriculum revision. However, our final proposal, as mentioned previously, has not yet been approved. Despite the constraints that the CBA has confronted in recent years, the program in Office Administration that replaced the Secretarial Sciences program is about to be implemented.

4 Institutional Self Study and Planning

4.1 ENROLLMENT ANALYSIS AND PROJECTIONS

The Institutional Overview section mentioned that students requesting admission to the UPRM must file an application with the Admissions Office. All applicants must submit evidence of having a high school degree, or its equivalent, from an institution accredited by the Department of Education in Puerto Rico. Prospective applicants must take the Admission Test administered by the College Board. Prospective students must submit documentation or records of their high school studies and reports of the entrance examination tests.

Currently, admission to the UPRM is based on a formula that allows us to generate an admission index for each applicant. The student's General Admission Index (GAI) is based on 50% the applicant's high school grade point average, 25% the verbal score, and 25% the mathematical score of the College Board Test. These raw scores are converted to a scale to obtain the GAI. Admission is granted to students whose index strictly complies with the minimum value established by the UPRM Administrative Board (based on the recommendations of the academic departments and Deans) for the program for which the student applies. The GAI may vary from year to year depending on the demand for a particular program and the number of students that can be accommodated.

The formula used to determine the GAI changed significantly in 1994 when the Board of Trustees changed the weights of the three components in the calculations. (See the Board of Trustees Certification Number 015-1994-95, Appendix F). This new formula was first used for students admitted into UPRM during the 1995-96 academic year. Before 1995-96, the GAI was based on 33.3% the applicant's high school grade point average, 33.3% the verbal score, and 33.3% the mathematical score of the College Board. Therefore, the verbal and math scores were given a total

weight of 67%. However, for students admitted under the new formula the scores accounted for only 50% of the GAI; the remaining 50% is based on the student's high school grade point average.

Immediately following this change in the equation, the UPR generally, and the UPRM specifically, experienced an unprecedented increase in the number of students enrolled in the institution. The general feeling among faculty, and even administrators, was that changing the equation to calculate the GAI resulted in lowering the academic standards for admission into the UPRM. Further, this change was one of the primary changes that contributed to increasing the number of students admitted to the UPR and increasing the number of students who would otherwise have not been admitted to the institution.

4.1.1 STUDENT ENROLLMENT AT UPRM

Figure 4.1 shows the trends for student enrollment in the UPRM from the 1993-94 to 2000-01. It is quite clear that the UPRM experienced significant growth during this ten-year period. However, the greatest period of growth was experienced during the 1995-96 academic year when the new GAI computational formula was first used.

During the 1993-95 academic years, the student population at UPRM remained fairly stable ranging from 10,801 students in 1993-94 to 10,967 in 1994-95. However, starting in 1995-96, the UPRM experienced significant increases in the total student population. Table 4.1 shows that the total student enrollment in the UPRM increased from 10,967 in 1994-95 to 11,736 in 1995-96 to 12,426 in 1996-97 to 12,846 in 1997-98. During these four academic years, the total student body at the UPRM grew by 1,879 students or by approximately 17%. This unprecedented growth has had a significant impact on institutional resources. Furthermore, the lack of adequate academic preparation of students entering the UPRM under the revised equation has required the development of remedial courses in English and Mathematics (e.g., ENGL 0066, ENGL 0067, MATE 0066). For example, during 1999-2000, 37 sections of remedial courses in English and Mathematics were offered.

Table 4.1.1 shows that the growth in student enrollment at UPRM stabilized during the 1998-2000 academic years with a total of 12,794. During the 2000-01 year, we experienced a reduction of 380 students for a total of 12,414 students. The student population at UPRM is expected to remain fairly stable in the years to come.

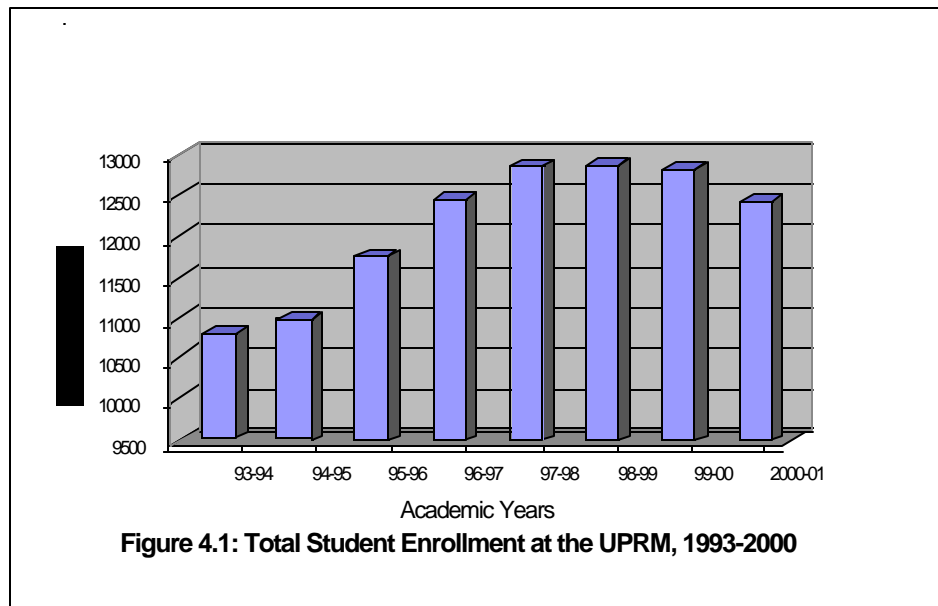


Table 4.1.1: Total Student Enrollment at the University of Puerto Rico Mayagüez , 1993-2000

Academic Year	Total Student Enrollment	Change in absolute numbers	Percent Change
1993-94	10,801	-	-
1994-95	10,967	166	15
1995-96	11,736	769	70
1996-97	12,426	690	59
1997-98	12,846	420	34
1998-99	12,883	37	3
1999-2000	12,794	-89	-7
2000-01	12,414	-380	-31

Figure 4.2 shows the trends in undergraduate enrollment at UPRM from 1995 to 2000. As expected from the previous discussion, the data show that undergraduate student enrollment

increased from 1995-96 to 1998-99. Table 4.1.2 shows undergraduate and graduate enrollment at the UPRM by academic programs from 1993-94 to 2000-01. The data clearly shows that undergraduate student enrollment at the UPRM experienced a significant increase from 10,328 in 1994-95, to 10,955 in 1995-96, to 11,554 in 1996-97, to 11,771 in 1997-98, to 11,824 in 1998-99. During this period, undergraduate enrollment increased by 1,496. The growth in undergraduate student enrollment during this period of time accounted for 82% of the total growth in the student body at the UPRM. As Table 4.2 shows, all four colleges were significantly impacted by the increase in the student body. From 1994-95 to 1998-99, all colleges saw their undergraduate enrollment increase from a low of 215 students for the CBA, to 265 for CAgS, to 307 for CE, and 709 for CAS.

From 1999-2000 to 2000-01 the colleges, with the exception of CAgS saw programs register a decrease in the number of undergraduates. Undergraduate students represented 92% of the total student population at the UPRM during the 2000-01 academic year; this figure has remained fairly stable or experienced only a slight reduction since 1993. Table 4.2 shows that in 2000-01 students in the CE comprised 39.8% of the total undergraduate student body enrolled at the UPRM compared to 8.4% for CAgS, 13.7% for Arts, 22.2% for Sciences, and 15.9% for Business Administration. This represents very little change since 1993.

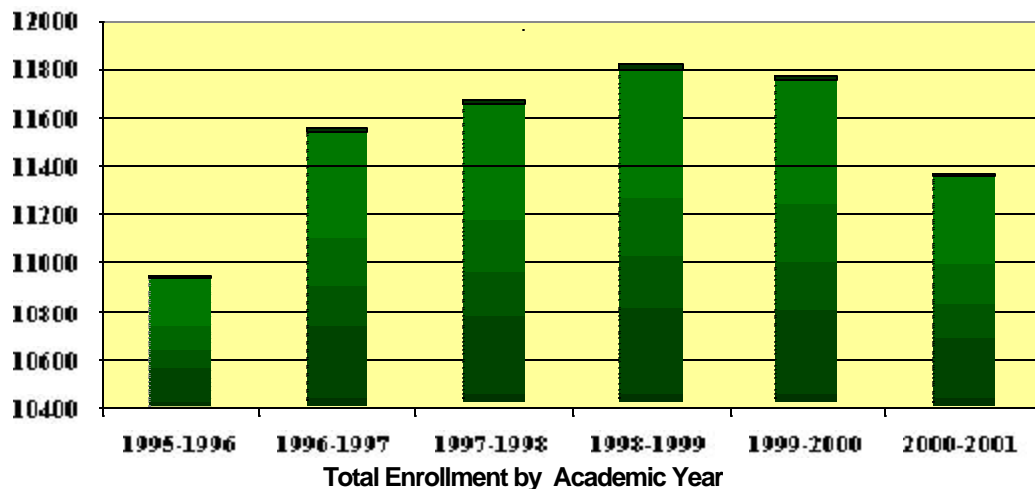


Figure 4.2: Trends in Undergraduate Enrollment, UPRM, 1995-2000

Table 4.1.2: Undergraduate and Graduate Enrollment, UPRM, by Academic Program, 1993-2000

	1993- 1994	1994- 1995	1995- 1996	1996- 1997	1997- 1998	1998- 1999	1999- 2000	2000- 2001
Undergraduate	10158	10328	10955	11554	11678	11824	11777	11368
<i>CE</i>	4152	4318	4469	4620	4577	4625	4606	4527
<i>CAGS</i>	607	641	741	810	870	906	937	959
<i>Arts</i>	1271	1291	1335	1445	1554	1589	1625	1556
<i>Sciences</i>	2383	2353	2529	2780	2811	2764	2760	2519
<i>CBA</i>	1745	1725	1881	1899	1866	1940	1849	1807

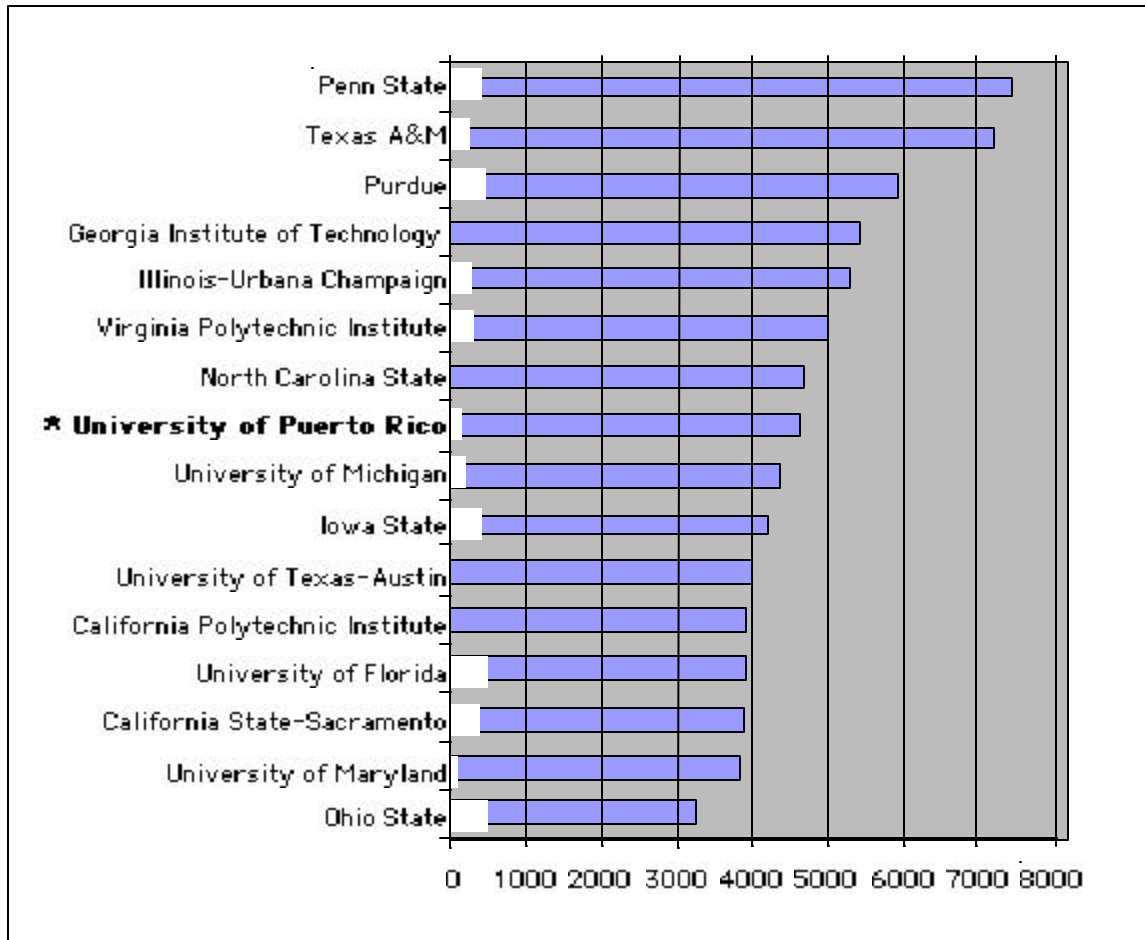
Graduate	643	639	781	790	874	864	835	848
<i>CE</i>	211	197	216	2492	282	265	246	255
<i>CAGS</i>	103	115	199	160	169	164	173	164
<i>CAS</i>	262	251	284	299	334	341	335	350
<i>CBA</i>	67	76	82	82	89	94	81	79

Total Other				250	294	195	182	198
Total UPRM	10801	10967	11736	12426	12,846	12883	12794	12414

Graduate enrollment at UPRM experienced a 32% increase from 1993-94 to 2000-01. During the 1993-94 academic year, 643 graduate students were enrolled at UPRM. This figure increased to 848 in 2000-01. During this time period, the four colleges all saw an increase in the number of graduate students in their programs. However, since the 1998-99 academic year, all colleges have stabilized their graduate enrollments or have experienced a slight reduction. For example, the number of graduate students in the CBA declined from a total of 94 during the 1998-99 academic year to 79 in 2000-01.

The UPRM has played an instrumental role in the formal training of scientists and engineers in Puerto Rico and the United States and is among the largest engineering institutions in the United States in terms of undergraduate enrollment (see Figure 4.3). For example, in 1998, the UPRM ranked number one in the number of bachelor's degrees awarded in engineering to women in the

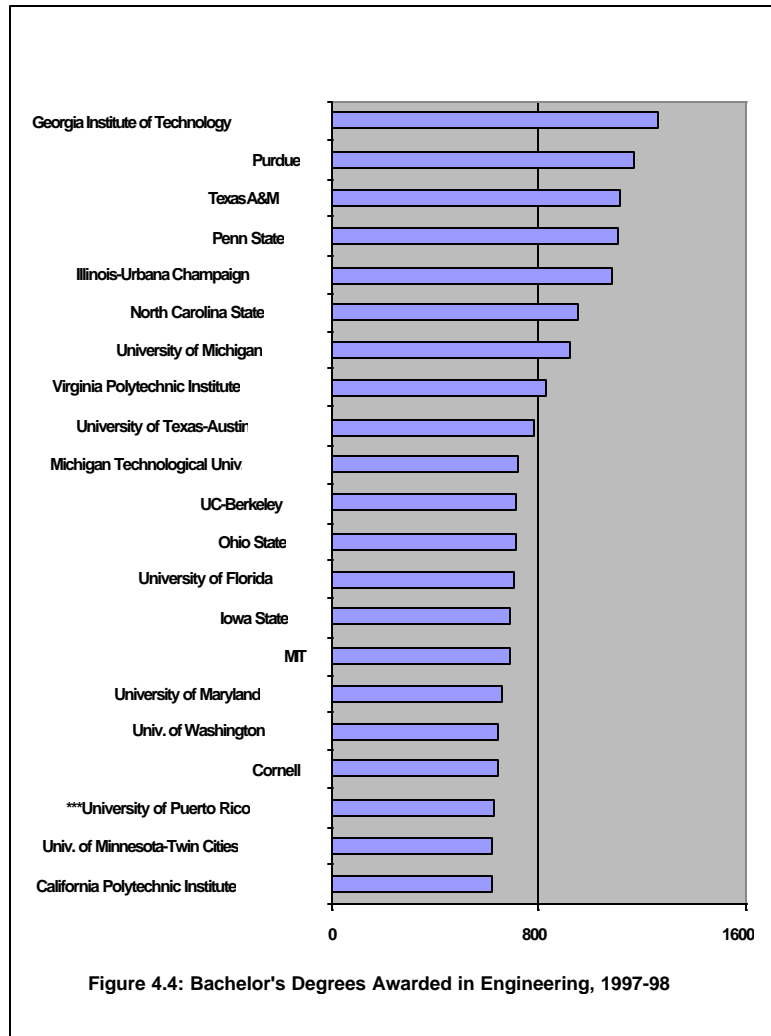
United States. During the 1997-98 academic year, the UPRM ranked eighth in terms of undergraduate enrollment in engineering.



Source: American Society for Engineering Education. (1999); Office of Academic Affairs and College of Engineering, UPRM.

Figure 4.3: Largest Engineering Institutions of Higher Education According to Undergraduate Enrollment, 1997-98

Figure 4.4 shows that UPRM ranked among the top twenty institutions in the United States in terms of the number of bachelor's degrees awarded to students in engineering which caused it to be the primary institution awarding degrees in engineering to Latinos. Approximately 35% of the Puerto Rican population that receives a bachelor's degree in science and engineering pursues a graduate degree (NSF, 1999). Thus, the number of students graduating with a bachelor's degree from UPRM will have a significant impact on the enrollment and graduation rates of Latinos in the United States at the graduate level.



Source: American Society for Engineering Education. (1999); Office of Academic Affairs and College of Engineering, UPRM.

4.1.2 PROJECTIONS

Table 4.1.3 shows the enrollment projections at the undergraduate and graduate level for UPRM for the academic years 2001-02 to 2005-06. The enrollment projections were generated using an extrapolation method based on the average annual rate of linear growth between 1995 (Time 1) and 2000 (Time 2). The following equations were used to generate enrollment projections for UPRM for the following five-year period:

1. Average Annual Rate of Linear Growth (r_{lin}) =

$$\frac{[(\text{Population at Time 2} - \text{Population at Time 1}) / \text{Population at Time 1}]}{n}$$

where:

Population at Time 1 = Student Population in 1995

Population at Time 2 = Student Population in 2000

n = number of years between the two populations

Table 4.1.3: Enrollment Projections, Undergraduate & Graduate Students, UPRM, 2001-2005

Undergraduates 1995	10,955	Graduates 1995	781	Student Body 1995	11,736
Undergraduates 2000	11,368	Graduates 2000	848	Student Body 2000	12,414

	Undergraduate		Graduate		Student Body
Projections	$r_{lin} = .008$	Projections	$r_{lin} = .018$	Projections	$r_{lin} = .012$
2001	11,450	2001	863	2001	12,549
2002	11,533	2002	877	2002	12,685
2003	11,615	2003	891	2003	12,820
2004	11,698	2004	904	2004	12,956
2005	11,781	2005	918	2005	13,092

Given the aforementioned assumptions, UPRM will probably experience a very moderate growth rate during the following five years at both the graduate and the undergraduate level. However, it is also reasonable to assume that the trend of declining enrollment that was initiated in the 1999-2000 academic year may continue into the near future. The different academic colleges at the UPRM have experience significant student growth while their resources, number of faculty, and infrastructure have not grown at the same rate or have remained the same. Actually, some colleges would argue that they have been confronting a period of shrinking resources while the services offered and their academic and administrative responsibilities have increased.

Consequently, some programs, particularly the CE, have increased their GAI to reduce the number of students admitted into their programs. Furthermore, the other three colleges have significantly reduced the number of available slots for new admissions into their programs from 1997-

98 to 2000-01. This has been an important factor in reducing undergraduate enrollment in the UPRM since the 1999-2000 academic year. Given the difficult fiscal situation that the UPRM is currently confronting and the shrinking resources that characterize all the academic and non-academic units within the institution, we expect that new initiatives will be implemented to maintain student enrollment at current levels or to reduce the total student population.

Table 4.1.4 shows the expected enrollment in undergraduate programs in the UPRM for each of the four colleges. We have provided separate projections for Arts and for Sciences. These projections show a slight to moderate increase for Engineering, Agricultural Sciences, and for the Arts while the Sciences and Business Administration are projected to experience a very slight reduction in their undergraduate enrollments during the next five years.

Table 4.1.4: Enrollment Projections, Undergraduate Programs, UPRM, 2001-2005

	<i>CE</i>	<i>CAGS</i>	<i>Arts</i>	<i>Sciences</i>	<i>CBA</i>
<i>Projections</i>	$r_{lin} = .003$	$r_{lin} = .059$	$r_{lin} = .033$	$r_{lin} = -.001$	$r_{lin} = -.008$
<i>2001</i>	4539	1003	1600	2517	1792
<i>2002</i>	4550	1046	1644	2515	1777
<i>2003</i>	4562	1090	1689	2513	1763
<i>2004</i>	4573	1133	1733	2511	1748
<i>2005</i>	4585	1177	1777	2509	1733

Table 4.1.5 shows the enrollment projections for the graduate programs at UPRM for the 2001-02 to 2005-06 academic years. It is expected the UPRM will generally continue its current trend of increasing graduate enrollment in its diverse academic programs. Specifically, our projections show that graduate student enrollments in Engineering and Arts and Sciences will continue to grow moderately while Agricultural Sciences will experience a reduction and the Business Administration program will remain fairly stable or experience very modest reductions.

We should note that the growth in graduate enrollments in the Colleges of Engineering and Arts and Sciences will be positively affected by several new graduate programs that were recently

initiated or that are pending approval by the UPR Board of Trustees and the Council on Higher Education (CHE). For example, in 1999, the CHE approved a proposal so that the Master's degree in Nursing, from the UPR Medical Science Campus, could be offered at the UPRM; a new doctoral program in Chemical Engineering began in January 2000; a new Ph.D. program in Information and Computational Sciences and Engineering and a Master's degree program in Industrial Engineering are pending approval by the CHE; and the UPRM Academic Senate approved a new Master's degree program in Computational Sciences during the 1999-2000 academic year. We should also note that the CAgS is actively involved in the development of a doctoral program in Biotechnology.

Once the graduate programs that are pending approval at the different levels are finally approved, UPRM will continue to increase its graduate student enrollment. UPRM is committed to graduate education. It will continue to strengthen its graduate programs and to generate new programs that will allow it to promote new research initiatives which will increase our contributions to the social, humanistic, economic, technological, and political issues of our society within and outside of Puerto Rico.

Table 4.1.5: Enrollment Projections, Graduate Programs, UPRM, 2001-2005

	<i>CE</i>	<i>CAgS</i>	<i>CAS</i>	<i>CBA</i>
<i>Projections</i>	$r_{lin} = .036$	$r_{lin} = -.035$	$r_{lin} = .046$	$r_{lin} = -.007$
<i>2001</i>	263	157	363	78
<i>2002</i>	271	150	376	78
<i>2003</i>	278	143	390	77
<i>2004</i>	286	136	403	77
<i>2005</i>	294	129	416	76

4.2 INSTITUTIONAL RESEARCH

UPRM has been struggling to develop an effective office of institutional research since 1996. Frequent administrative changes became a barrier for the continuation and definition of the duties and main objectives of the office. An Office of Institutional Research was opened in 1996 as part of the

Office of the Dean of Academic Affairs. In June 1997 a later administration didn't assign a budget to the office. In 1998 a third administration worked with a consultant (Dr. Jeffrey Seybert) to identify the areas of Institutional Research that UPRM needed. Based on his recommendations, a section of a Title V proposal submitted in June 1999 was dedicated to the development of the Institutional Research function (Appendix N). The proposal was successful but another administration received the funds in August 1999 and it had a different plan for institutional research. Therefore, the implementation of the work plan for institutional research outlined in the Title V proposal was affected and is behind schedule. In March 2001 the current administration came into office and it is determined to make institutional research function as outlined in the Title V proposal. The establishment of an effective office of institutional research has become a priority. Therefore, the following paragraphs describe the plan the institution is committed to in the Title V proposal and identify the activities that have been conducted.

4.2.1 BACKGROUND INFORMATION

UPR began to develop a comprehensive, system-wide institutional research function at both the system office and on each of the major campuses. The University Board of Trustees approved the Systemic Institutional Research Policy (Appendix O) and directed it to be implemented on all campuses.

Accordingly, UPR retained the services of Dr. Jeffrey Seybert, a well-known consultant, to review current data gathering and reporting practices and propose a model to guide the collection, analysis, and reporting of data information both at the Central Administration and on all campuses. To accomplish these objectives the consultant conducted a series of interviews and designed an information needs assessment instrument for distribution to appropriate staff.

The results of the needs assessment for the UPRM and the information collected in the interview served as the basis for the recommendations that follow:

1. Use of Institutional Research data and results to support planning and management decision-making must be implemented.

2. The implementation of a systematic information/data management plan for the campus.
3. Emphasis on accountability, effectiveness, and accurate, reliable reporting of data.
4. A formal plan to integrate the major data collection and reporting, planning, and management functions on the campus.
5. Clear and open internal communications.

In order to accomplish these recommendations, Dr. Seybert suggested the following plans:

1. Creation of a formal IR Office.
2. Creation of a policy level Institutional Research Steering Committee.
3. Creation of a policy level Management Information Systems Steering Committee.
4. Establishment and strict implementation of campus-wide policies regarding data definitions, sources, access, and control.
5. Full integration of the IR information into the assessment, planning, budgeting processes and programs implementation.

The UPR administrators engaged in a series of activities to follow the recommendations.

During the academic year 1998-1999 the following activities were completed:

1. A physical location for the Office was identified.
2. A Title V proposal applying for external funds was submitted and the funds were granted.
3. An "Institutional Research Steering Committee" was formed.
4. A "Management Information Systems Steering Committee" was formed and a survey was conducted identifying what data is collected, when, by whom and for what purpose.

4.2.2 INSTITUTIONAL RESEARCH OFFICE

The following descriptions of offices, personnel and functions were completed.

4.2.2.1 Organization

1. The OIR is a service office that uses objective methods of inquiry to collect and analyze data to convert the data into statistics and information that allow the institution to make informed decisions and formulate sound policies.
2. The OIR will have three functional areas:
 - a. Facilitation of the fiscal, institutional, and facilities planning
 - b. Coordination of Institutional Research, Evaluation, and Assessment
 - c. Administration of Statistics and Technical Studies
3. The Director of the Office will report to the Dean of Academic Affairs and work with the Institutional Research Steering Committee to determine the research and planning priorities for the campus. The Director will also be a member of the Management Information Systems Steering Committee.

4.2.2.2 Personnel. The staff will include the following:

1. Director
2. One full time professional-Institutional Research Assistant
3. Three full time technical support personnel. Two Statistics Officers and a programmer.
4. Research Associate
5. Two Administrative Secretaries to provide support to the staff.

4.2.2.3 Functions

1. Implement the IR Policy according to the Certification JS-98-99-108 (Appendix O).
2. Establish a system of data collection, analysis, and dissemination of information and knowledge guided by the academic mission and goals of the institution, that accurately describes the status of the academic and management activity of the individual units, as well as the entire system.
3. Determine the necessary metrics to characterize the academic, research, and service functions of the University and the basic quantitative and qualitative performance indicators that will provide the necessary intelligence and information for strategic planning and resource allocation.

4. Benchmark against best academic and administrative practices of peer institutions to enhance and improve the effectiveness and efficiency of the institutional units as well as of the whole system.
5. Establish a continuous and systematic data and information dissemination program that will keep all the institution's constituencies informed about the health of the academic, research, service, and administrative processes.
6. Provide the knowledge base to guide the decision making and accountability process of academic and administrative managers of the institution, both at unit level as well as those needed to achieve system wide coherence.
7. Provide the information and knowledge needed to articulate and optimize resources between the various offices while providing technical assistance.
8. Coordinate Institutional Effectiveness and learning outcome assessment activities between the various offices while providing technical assistance.
9. Provide campus wide reports and statistic profiles to the accrediting agencies, government, Central Administration and the community.
10. Design and conduct studies such as environmental scanning, assessment of strengths and weaknesses, needs of assessments, feasibility studies, campus facilities, enrollment projections, vision and mission studies and updates, university image and marketing studies and university climate among others.
11. Provide the linkages between the System, Institution, Department and OIR.
12. Keep up with the latest assessment techniques and trends in higher education by attending to the national and regional conferences about assessment and institutional effectiveness.

4.2.3 STUDIES PLANNED

The following reports and studies were prioritized and identified on each of the following areas:

Academic Planning: enrollment trends, freshmen profiles, admissions trends, retention trends, and validation of the registration process.

Strategic Planning and Academic Planning: identification of information needed to improve registration process, linkages between the physical planning office and course scheduling planning, and needs assessment.

Effectiveness: accomplishment of educational objectives; satisfaction of graduates, success of graduates; satisfaction of employers; percentage of employment of alumni; types of placement; identification of success and persistent indicators; time to graduate; reasons and profile of students that do not finish on time; desertion profile; implementation of outcomes assessment programs at all levels; assessment of processes of academic advise; and, assessment of graduates knowledge of contemporary issues, professional and ethical responsibility; ability to formulate and solve problems ability to communicate effectively, recognition of the need to engage in life long learning, and ability to function on multidisciplinary teams.

4.2.4 IMPLEMENTATION STRATEGIES FOR THE NEXT FIVE YEARS

The purchase of computer equipment and a server was a priority for Year One as the start up year for the OIR. Year One also involved the staffing of the office for which the UPR Central Administration provided \$100,000 for salaries and UPRM will relocate two current line item positions to include clerical staff and a statistics officer. Years Two and Three entail the completion of staffing requirements and the performance of studies of institutional effectiveness. Years Four and Five will complete small equipment purchases and the institutionalization of benchmarks, timelines and reporting procedures. Specific activities for each year are shown in Appendix N.

We are currently on Year Two of the proposal. The computer equipment was received and installed in March 2001 in new office space in Monzón. Two technical consultants have been working since January 2000 to organize existing data files to make them compatible for the purpose of analysis. Also, a set of eight studies was prioritized from within the previously identified studies, and the data required to conduct the studies was identified. Those studies were new student and graduating student profiles, study of our alumni, retention and cohort study, partial and total withdrawal behavior and impact, economic impact and nature of remedial courses needed by our

new students, admissions criteria effectiveness, marginal cost per student by academic program, and utilization of human resource. Appendix P shows the plans developed for those eight studies.

Unfortunately, the office was not ready to contribute to the preparation of the PRR report because it hasn't yet gathered or analyzed any data. We understand that the office should be working effectively and be the major source of support for future accreditation, strategic planning and budgeting tasks. A Director of Institutional Research has been appointed and will start on June 1, 2001.

4.3 STRATEGIC PLANNING

4.3.1 STRATEGIC PLANNING

In August 1999 our institution began a comprehensive and participatory process to revise the mission, vision and objectives of each dependency and of the institution, and to identify the outcomes and indicators that were going to be assessed. The process is not finished. However, many achievements can be listed. Each of the departments of the CAS, CE, CAgS and CBA completed their revision of mission, vision, and objectives in the year 2000. Most of the departments are now working on prioritizing goals and objectives and developing the outcomes assessment plans. All the colleges except the CAS completed, discussed and approved new versions of mission, vision and objectives. The Colleges that completed that stage are now working on their assessment plans. The Office of the Dean of Student Affairs developed a strategic plan and reviewed its mission and vision statements.

The process that has been implemented required all the dependencies to revise their documents of mission, vision and objectives. Committees of strategic planning must be formed in each department and include representatives of its main constituents. The committees need to elaborate the drafts of mission, vision and short and long term objectives. Those drafts were discussed in departmental meetings and eventually approved by the departments. After that stage, the documents were submitted to the Strategic Planning Committees of each college and administrative office which has representatives from the departmental committees. At that level, the

deans were supposed to work with the committees to combine the Chancellor's work plan and goals, the Central Administration's goals, and the fiscal constraints with the plans submitted by the departments. Drafts of revised mission, vision and objectives were then developed for the colleges, and discussed, evaluated and approved by each college in faculty assemblies. The Office of Strategic Planning and Development was supposed to receive the final documents from each college and develop a draft of revised mission, vision and objectives for the institution to be submitted, discussed and approved by the academic senate. Appendix M includes the Strategic plans of the three colleges that have prepared them and the Office of Student Affairs. The Office of Strategic Planning and Development has not yet completed a draft of the strategic plan for the institution. Therefore, the plan developed in 1997 is the current institutional strategic plan (Appendix C).

4.3.2 OUTCOMES ASSESSMENT

General outcomes to assess our educational activity began to be identified by the administration. The educational activity comprises several processes such as student learning, curriculum administration, courses, teaching, and faculty productivity. The following table describes the relationship between the processes described above, the outcomes assessment indicators, and the main users of these data and information.

Table 4.1 Processes, Assessment Indicators, and Users

PROCESS	OUTCOMES ASSESSMENT MEASURES / INDICATOR	USER OF RESULTS
Student learning	Graduation rates and trends by program and level Retention rates by program Grade Point Averages distribution by program Distribution of scores in national major field exams Percent who obtain professional license Admissions rates into graduate/professional schools	Students, faculty, Departments, Colleges, Institutional Research, Administrative Board, Central Administration
Curriculum	Retention rates Success in graduate/ professional programs Job placement rates Career development Writing proficiency of students Communications proficiency in English Computer proficiency Pass rates on gate-keeper courses Effect of educational support Life-long learning attitude Ethical and professional conduct	Accreditation Boards, Colleges, Departments, Institutional Research, Administrative Board, Academic Affairs, Academic Senate

Courses	<p>Course evaluations</p> <p>Comprehensiveness of course content</p> <p>Relevance of content</p> <p>Extent to which content is current</p> <p>Fairness: testing and grading</p> <p>Clarity of course objectives</p> <p>Accuracy of catalog description</p> <p>Curricular reform innovation</p> <p>Advanced study rates</p> <p>Overall quality of course</p>	<p>Students,</p> <p>Faculty,</p> <p>Colleges,</p> <p>Departments,</p> <p>Academic Affairs</p> <p>Accreditation Boards,</p> <p>Institutional Research</p>
Teaching	<p>Instructor's class preparation</p> <p>Instructor's class presentation</p> <p>Instructor's knowledge of subject</p> <p>Instructor's enthusiasm in teaching</p> <p>Instructor's help with problems</p> <p>Instructor's availability for consultation</p> <p>Relevance of lecture information to course objectives</p> <p>Relevance of examination content to course objectives</p> <p>Quality of classroom discussion</p> <p>Relevance of laboratories to course objectives</p> <p>Overall quality of instruction</p>	<p>Students</p> <p>Faculty,</p> <p>Institutional Research</p>
Productivity	<p>Student credit-hours generated per full-time faculty (FTE)</p> <p>Sections generated per full-time faculty FTE</p> <p>Pass rate on licensure certification exams</p> <p>Degree completion rates and trends</p> <p>Instructional expenditures per FTE student</p> <p>External funds expended per full-time faculty FTE</p> <p>Staff FTE per full-time faculty FTE</p> <p>Expenditures for support functions as proportion of total expenditures</p>	<p>Administrative Board</p> <p>Central Administration</p>
Research	<p>Peer reviewed and non-peer reviewed publications</p> <p>Externally funded projects</p> <p>Project reports submitted/ completed on time</p> <p>Number of graduate students per full-time faculty FTE by level (MS/MA, Ph. D.)</p> <p>Dollar amount of grants, number of grants received, number of grants extended, types of grants received</p>	<p>Colleges</p> <p>Departments</p> <p>R&D Center</p>
Service	<p>Number of partnerships, duration of partnership, satisfaction surveys</p> <p>Number of business start-ups, number of student internships, number of partnerships</p> <p>Number of students entering in competitions, Number of awards earned,</p> <p>Number of presentations in public forums</p> <p>Percent of faculty/staff involved/serving in Boards, Commissions, Judges, etc.</p> <p>Community feedback</p>	<p>Colleges</p> <p>Faculty</p> <p>Departments,</p> <p>Institutional Research</p> <p>Administrative Board</p>

These plans have not been implemented yet. Some colleges are developing outcomes assessment teams to continue the work of their strategic planning committees and begin the data

collection required. The CE has developed a proposal for their Outcomes Assessment function based on their needs for strategic planning and for their ABET accreditation. The OIR will collaborate in the implementation of the CE plan and guide the development of equivalent plans for the other colleges and dependencies.

4.3.3 COLLEGE OF ENGINEERING OUTCOMES STRATEGIES AND ACTIVITIES

The CE wishes to revise, improve and innovate its programs on a continuous basis. This has been specifically stated as one of the College's strategic goals, which, in turn, matches the institution's mission.

Since the CE wishes to facilitate continuous assessment of its academic programs and student learning, it has established the System for Evaluation of Education (SEED) as a mechanism for continuous improvement. SEED assists faculty, department heads, staff and students in the design and implementation of program and student learning outcomes assessment strategies. The Center will work in close collaboration with the OIR when this office is fully operational

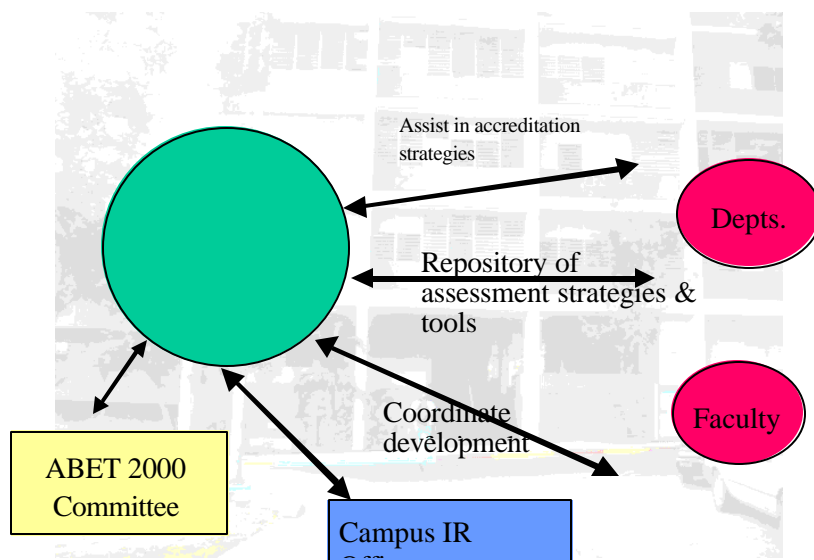


Figure 4.5: The System for Evaluation of Education

The SEED office is located under the Office of the Associate Dean of Engineering for Academic Affairs. Its principal goals are to:

- Establish and facilitate a strategy for continuous evaluation of engineering programs and student learning outcomes assessment
- Coordinate with engineering departments and accreditation committees (ABET 2000 and MSA) activities regarding accreditation processes, including their implementation strategies.
- Assess outcomes of the Dean's Strategic Plan
- Become the CE's repository of Assessment strategies, instruments, results and reports
- Coordinate professional development activities concerning evaluation and assessment.
- Disseminate assessment results by electronic means to stakeholders and decision-makers for their information and decision-making.

As one of the most pressing matters for the CE in 2000, the center will deal with the ABET 2000 accreditation process, due in 2002, by working in close collaboration with the new OIR.

ACTIVITIES SO FAR:

1. CE departments are working in close collaboration with SEED to design and implement their ABET 2000 plan.
2. There will be a CE ABET 2000 Committee with representatives from all the academic departments. Its charter is to share assessment strategies concerning ABET 2000 and provide synergy between departments in their goals of accreditation.
3. SEED will collaborate with department heads, their ABET 2000 committees, and CE's ABET 2000 Committee in the following activities:
 - a. Developing the department's continuous program evaluation and ABET 2000 accreditation plans, including development of assessment tools, the establishment of a data collection schedule, data collection and outcomes report writing
 - b. Professional development
 - c. Other activities as deemed necessary.

All departments of the COE have developed individual assessment activities, of which some examples are included.

Table 4.3.2 Activities Conducted and Planned

Date/Place	Activity/Purpose	Who	Status
November, 2000	Microsoft-Raytheon sponsored ABET 2-day Retreat Vision, Mission, Educational Objectives and Outcomes.	Deans, Department Chairs and ABET Departmental Committees	COMPLETED
February 1-2 2001 Polytechnic University	ABET 2 –day Open Faculty Workshop. Educational Objectives and Outcomes Assessment.	Selected members (20) of the CoE	COMPLETED
February 8, 2001 10:30 am S-303	ABET Committee Meeting: <ul style="list-style-type: none"> • Status of Dean’s Office ABET Plans • Raytheon/MS Feedback Documents • Status of Departmental Plans • Plan Year 2000 Activities • Submission of mission statements for approval in departmental & faculty forums 	All members of Departmental Committees	COMPLETED
February 13, 2001 10:30 am S-303	MS Project Center Presentation by Microsoft Caribbean and Computing Resources Group: <ul style="list-style-type: none"> • Possible collaboration (project management software that could be customized to our ABET 2000 assessment strategy and Self-Study Report generation & management). 	ABET Committee Members	COMPLETED
March 27, 2001 S-320 10:30 am	MS + CRG Project Central Proposal presentation	ABET Coordinators and IT support	COMPLETED
February – May 2001	Program Skills Matrix <ul style="list-style-type: none"> • Tools, data collection schedule • Workshops 	Departments	IN PROCESS
February – May 2001	Development of the web-based system for the ABET Self-study <ul style="list-style-type: none"> • Faculty/staff Training 	SEED (A. Ponce, JP Carvajal) & ABET Committees	PENDING - IN PROCESS
March 30, 2001	Developing an Outcomes Based Course Workshop to 60 A&S Faculty; Rosa Buxeda, L. Morell & JI Vélez	A&S Faculty	COMPLETED
April 6, 2001 Medical Emporium Sky Room 8:00am – 1:30 pm	Ethics Across the Curriculum Workshop	ABET Committee Members	COMPLETED
April 16, 2001 8:00 am – 12:00 pm	Developing an Outcomes Based Course CAIDEL	Civil Engineering Faculty	COMPLETED

April 24, 2001	ABET Evaluator Training Houston, TX	Lueny Morell	COMPLETED
Summer 2001	Data collection, assessments of student learning outcomes (a-k), strategic plans completed, other	Departments, SEED facilitates	
Summer 2001 August– November 2001	FIRST ASSESSMENT CYCLE DUE	Departments, SEED facilitates	
August- November 2001	Data collection and testing of assessment strategies	Department Heads. SEED facilitates	
August 2001	Analyze data	Department Heads. SEED facilitates	
September 2001	Provide feedback to constituents	Department Heads. SEED facilitates	
October 2001	Propose changes, new benchmarks, and document & distribute (NOTE: This step could start a new cycle.)	Department Heads	
November 9-10, 2001	Raytheon-Microsoft ABET Mock Visit	Departments, SEED	

4.3.3.1 Department of Civil Engineering (DCE)

The Department of Civil Engineering has engaged in various assessment initiatives as part of our transition to comply with ABET 2000 criteria as follows:

1. **Graduating Students Survey:** A comprehensive survey has been filled by graduates at the time of graduation during the last two years. The objectives of the survey are to evaluate the level of success of our educational and institutional goals and objectives and to determine the level of qualifications of our graduates with our education in the Department.
2. **Alumni Survey:** We are revising a survey to assess alumni perception and satisfaction of our program.
3. **Department Statistical Data Base:** We are developing a data base of department vital statistics which focuses on academic performance, course load distribution, research load distribution, faculty activities, publications research activities, student success rate base of courses and credits taken, equivalent faculty/student loads students transfer, and other important and relevant statistics.
4. **ABET Accreditation Committee:** The faculty and administration have been participating in training on how to design outcome based syllabus, how to express measurable objectives and goals, how to identify evaluation and assessment tools, and how to collect data for this purpose.

Institutional requirements are used to measure success and achievement regarding institutional objectives. Monthly reports are given to the Dean’s Office and to the faculty on Department achievements in various strategic categories which respond to the Institutional Strategic Plan.

4.3.3.2 Department of Mechanical Engineering (DME)

The significant constituents of the DME program are its students, alumni, faculty, and employers. Our educational program was designed and approved by the departmental faculty in May 2001. As part of the establishment of the program educational objectives a set of measurable, quantitative values were set for each educational objective. Table 4.3 describes these values and how they relate to the educational objectives.

Table 4.3.3 Educational Objectives and Evaluation Tools

Educational Objective	Evaluation tool(s) and threshold values.
Have the ability to apply mathematics, science and engineering fundamentals to the modeling, analysis and solution of real-life mechanical engineering problem.	Student pass exams and quizzes that evaluate this objectives with a minimum score of C.
Be capable of designing and conducting experiments while maintaining a critical and objective mind when interpreting data.	A standard evaluation form is used to measure this objective. Student must score 70% or higher.
Have the ability to communicate effectively orally and in writing in both English and Spanish.	A standard evaluation form is used to measure this objective. Student must score 70% or higher.
Have the interpersonal skills needed to perform effectively in interdisciplinary team, both as a leader and a team member.	A standard evaluation form is used to measure this objective. Student must score 70% or higher.
Be able to design a component, systems or process to meet desired needs in both the mechanical and thermal domain.	A standard evaluation form is used to measure this objective. Student must score 70% or higher.
Be an educated citizen with a strong sense of his/her social and ethical responsibility.	A survey is used to measure this objective. Student must score 70% or higher.

Be motivated to continue his quest for knowledge throughout his life.	A survey given to senior students is used to measure this objective. 780% of students must show the motivation of continuing their quest for knowledge.
Be trained in the latest in engineering tools.	A standard evaluation form is used to measure this objective. Student must score 80% or higher.

This program was established in August 2001 with the full support of the DME faculty and staff. Assessment tools were implemented in the required ME courses which were reviewed to guarantee they are in accordance with the educational objectives. Data is collected in each course in the form of exams, evaluation forms and surveys. At the end of every year this data is analyzed and compared with the thresholds established for each educational objective. If there are any deficiencies, a plan of action is design and approved by the faculty during the summer period and implemented during the next academic year. This continuous assessment process has a one-year period.

The revision of the educational objectives is done every three years and involves the input from our four constituents. A series of activities are carried out during the spring of every third year. An industrial advisory board meeting is held at the University and a survey is fill out by the industrial representatives. Questions are asked about the relevance of the educational objectives to the need of the industry.

The faculty and students each have separate one-day retreats to discuss the educational objectives in light of their current experiences. Students are asked specific questions about the relevance of the educational objectives, and the effectiveness of the assessment tools used. They are also asked to provide suggestions to improve the program. Faculty is asked to describe their experiences under the proposed educational program and to provide suggestions to improve the efficiency and effectiveness of their teaching, and interaction with students. A report generated from these two retreats is later used in the development of an improvement plan.

Our fourth constituent, the alumni, are asked to evaluate the educational objectives in light of their experiences and professional development. They are also asked to give suggestions on how to improve the program.

Once we have received all the input from all our constituents, we publish a revised set of educational objectives and define the assessment tools, assessment matrices and passing values. This information is put into action during the next three years.

4.3.3.3 Industrial Engineering (DIE)

For the last three years the DIE has conducted an annual survey that includes alumni, graduating students, and employers. The survey tries to measure the perceived performance level of the typical IE graduate in applying knowledge, concepts and techniques related to industrial engineering as well as other soft skills. It also tries to measure from the point of view of the students how instrumental were the curriculum the IE facilities and environment in helping the students achieve an acceptable preparation as industrial engineers. The major impact of this survey has been in identifying problem areas that needed immediate attention. For instance, the students at some point identified the facilities in the department as the top priority for improvement. As a result, significant efforts have been carried out to enhance facilities such as writing successful proposals for equipment. Recently the department received a significant donation from Intel of 25 computers for the Quality Control Laboratory, the Human Factors Laboratory, and for graduate student use.

5 Fiscal Analysis

5.1 ANALYSIS AND PROJECTIONS: 2001-2005

The budget assigned to UPRM from the General Fund of the UPR for FY 2000-01 totals \$127,543,273. This amount was assigned as \$103,443,083 to the campus, \$12,131,035 to the AExt, and \$11,960,155 to the AES. The assigned budget represents an increase in the budget adjusted to June 30, 2000 of \$6,026,691. As of February 28, 2001 the amended budget is \$133,988,980; of this \$109,715,562 corresponds to the campus, \$12,145,414 to the AExt, and \$12,128,004 to the AES. The amended budget represents 19.07% of the UPR General Fund. Excluding the agricultural sectors, the campus budget accounts for 16.18% of the UPR budget.

With the assigned resources and expense projections to June 30, 2001 the campus is projecting unavoidable expenses as shown in Table 5.1, which resulted from actions taken in the Central Administration.

In addition to these projected insufficiencies, UPRM needs additional resources to cover three urgent needs. First, increased energy costs will amount to a deficit of \$1,693,758 by year-end. Second, toxic waste removal of certain chemicals will cost \$71,228. Third, we have to proceed with extreme urgency to clean campus land affected by leaks of fuel from tanks in the Buildings and Grounds Department with the cost to begin the work estimated at \$120,200.

In brief, UPRM needs \$4,801,675 from the UPR General Fund to cover pressing operational needs before the close of this fiscal year. To date the Central Administration has not transferred these emergency funds. As a result, UPRM has had to impose fiscal controls such as freezing economies saved in the salary items, eliminating automatic transfers, terminating all purchasing on February 28, 2001, and freezing vacant positions. If the needed funds are not disbursed, we will have to postpone any action that requires disbursement of funds to FY 2002.

Table 5.1. Resources indebted by the Central Administration to UPRM (Fiscal year 2000-01)

Description	Campus	EEA	SEA	Total
<i>Christmas Bonus</i>	\$223,679	\$12,515	--	\$236,194
<i>Sick leave excess (more than 90 days) – Non teaching personnel</i>	175,227	79,497	\$7,491	262,554
<i>Sick leave excess (more than 90 days) – Teaching personnel</i>	184,529	35,324	--	219,853
<i>Retirement Employer Contribution</i>	341,430	40,660	9,310	391,400
<i>Accrued vacation and sick leave</i>	547,103	--	--	547,103
<i>Sick leave Bank</i>	29,363	--	--	29,363
<i>Unemployment Compensation</i>	16,447	--	--	16,447
<i>State Insurance Fund Employer Contribution</i>	156,863	--	--	156,883
<i>Health Insurance</i>	782,434	--	--	782,434
<i>Matching Funds</i>	274,278	--	--	274,278
TOTAL	\$2,731,353	\$168,335	\$16,801	\$2,916,489

In terms of the consolidated budget for operating expenses, the projection for FY 2001 rose to \$195 millions. Table 5.2 shows the UPRM budget by source of funds for FY 2000 and 2001.

UPRM used the zero base budget approach to plan its budget for FY 2001-02. As a result of using this process UPRM solicited an operating budget of \$157,689,198, of which \$132,529,269 corresponds to the campus, \$12,546,494 to the AES and \$12,613,434 to the AExt. Table 5.3 summarizes the priorities established by UPRM.

Table 5.2. UPRM Consolidated Budget for Operating Expenses [Amended budget – February 28, 2001]

Source of Funds	1999-00	2000-01	Change	
			Amount	Percent
<i>UPR General Fund</i>	\$130,810,472	\$133,988,980*	\$3,178,508	2.4
<i>External Sources**</i>				
<i>Federal Government</i>	40,653,314	44,891,273	4,237,959	10.4
<i>State Government</i>	3,872,064	7,513,925	3,641,861	94.1
<i>Private institutions</i>	5,240,128	4,950,279	(289,849)	(5.5)
<i>Self earnings</i>	3,851,185	3,656,360	(194,825)	(5.1)
TOTAL	\$184,427,163	\$195,000,817	\$10,573,654	5.7

Table 5.3. Priority Needs for UPRM

Description	Cost
15 Teaching Positions	\$848,500
Matching funds for the Technology Corridor Proposal	
• <i>PhD in Information and Computational Sciences and Engineering</i>	363,019
• <i>MS en Scientific Computation</i>	119,927
• <i>PhD en Applied Chemistry</i>	410,460
• <i>PhD en Biotecnology</i>	445,976
• <i>BS en Software Engineering</i>	615,797
• <i>Information Technology Center</i>	481,945
Other new programs	
• <i>BS Agricultural Engineering</i>	99,076
ABET accreditation of the Engineering programs activities	500,000
Teaching Assistantships	1,289,390
Summer Program	1,415,215
Teaching personnel promotion	455,290
Additional funding for electrical power service	1,267,895
Administrative Information System for 2000	350,000
Sick leave in excess of 90 days	632,487
TOTAL	\$9,332,577

The Budget Proposal for the Government of Puerto Rico that the Governor submitted to the Legislature for FY 2002 recommends a consolidated budget for the UPR of \$1032 billions, which includes \$694.9 million assigned by the legislative formula from the General Fund of Puerto Rico. This budget recommendation contains an increase of \$60.5 million over the previously mentioned budget that the UPR has in place for the current fiscal year. Additional funds were assigned to the Presidency for the General Fund of the UPR (\$53.8 million), and to the Medical Sciences Campus (\$6.6 million). A consolidated budget of \$160.7 million has been recommended for UPRM, of which \$127.5 million corresponds to the General Fund. This is the same amount that was budgeted for the current fiscal year. Table 5.4 shows the sources of funds for the recommended budget.

Table 5.4. Operational Budget Recommended by the PR Government to the UPR and UPRM

Sources of Funds	Recommended		Percent
	UPR	UPRM	
<i>Special Assignments – Formula</i>	\$694,887	\$127,534	18.4
<i>Federal Funds</i>	168,698	26,791	15.9
<i>Self Earnings</i>	123,433	4,330	3.5
<i>Other resources</i>	45,849	2,063	4.5
TOTAL	\$1,032,867	\$160,718	15.6

The totals used in this budget differ significantly from the data available at the UPRM budget office. First, the amount assigned to the UPRM budget under the designation of special assignments is equal to the adjusted budget of the UPR General Fund of July 1, 2000. At present this budget is \$128,249,571. Second, our projection for external funds is \$61 million.

Concerning the previous problem, our hope is that the UPRM operating budget based on the General Fund of the UPR will be determined by the Board of Trustees on the recommendation of the President on or before July 1, 2001. Notwithstanding, if we consider that UPRM has been receiving approximately 20% of the university's operating budget since 1996-97, we can hope that by June 30, 2002 UPRM will have accumulated an amended operating budget of \$138.9 million. This figure

represents an increase of about \$5 million over the revised budget for FY 2000-01, and \$18.8 million less than the amount requested by UPRM.

Consequently, this takes attention from the priorities stated by the UPR President that an additional sum will have to be used to cover salary raises and employee benefits and for which UPRM will have to cover with its own economics.

The Budget Proposal for the Government of Puerto Rico projects net income from taxes in the chapter on consolidated resources found at:

<http://www.presupuesto.gobierno.pr/INFOREFE/capingre.htm>

Table 5.5 shows the estimates for FY 2001 and 2002, which serve as the base for the amount that will be assigned to the UPR for FY 2003. In addition, this table also indicates the amount that will be assigned to UPRM on June 30, 2003, assuming, as we stated previously, that we will receive 20% of the UPR budget.

Table 5.5. Income Estimates of the Puerto Rican Government, from the sum of the UPR Formula and UPRM Budget

Description	Projection
Projected net income from the Puerto Rican Government General Fund *	
• 2001	\$7,505,000
• 2002	7,405,000
Total	\$14,910,000
Average	7,455,000
Formula for the UPR (9.67%)	\$720,899
Estimated budget for UPRM (20% of the UPR)	\$144,179

If the projections just indicated become concrete, the UPRM budget for June 30, 2003 will be \$144.2 million, which is \$5.2 million over the estimate for the previous year.

Table 5.6. Projections of the UPRM Budget Charged Against the General Fund

Fiscal Year	Projection	Change over the year before
2001	\$133.9	--
2002	138.9	\$5.0
2003	144.2	5.3
2004	149.8	5.6
2005	155.7	5.9

The Budget Proposal for the Government of Puerto Rico for FY 2002 does not provide information about estimated income for FY 2003 and 2004, which is needed to project the funds to be assigned to the UPR for both FY 2004 and 2005. The Department of the Treasury does not have these estimates either. Even so, the UPR Budget Office projected an increase of \$5.6 million for 2004 and \$5.9 million for 2005. Table 5.6 summarizes these projections.

The recurring budget obtained by UPRM to date as well as that projected for the next five years are not based on need priorities for UPRM. Because of this services offered to the university community have to be kept at the required minimum. There are serious difficulties for the development of new programs, especially on the graduate level, support for research, student programs and extra-curricular activities, and preventive maintenance for the buildings and grounds. If UPRM is to operate in conditions of optimum excellence it will have to receive the higher level of participation in the total UPR budget such as it had in 1964-65. That year, before the enactment of the UPR budget formula, the Legislature evaluated the requests and assigned funds directly to UPR, and UPRM received 25% of the total.

5.2 FISCAL OPERATIONS, A SUMMARY: 1995-2000

During the period from FY 1995 to 2000 the UPRM budget charged to the General Fund of the UPR increased from \$85 million in 1995 to \$131 million in 2000, that is, by \$46 million. This amount represents a 54% increase, mainly caused by the inclusion of the operating budgets of the

AES and the AExt into the formula set by the Legislature for the UPR. This formula increased by 0.27% because of this inclusion.

If we exclude this data on the agricultural services, the growth in the Campus budget during the same period is \$22 million, or 26%.

During the same period, the budget of the UPR General Fund increased from \$468 million in 1995 to \$642 million in 2000. This increase of \$174 million represents a 37% growth. In FY 1994-95 UPRM accounted for 18.16% of the General Fund of the university; in FY 1999-00 this rose to 20%. Table 5.7 compares the General Fund budget for UPR with that of UPRM.

The increase in the share from 18% to 20% is accounted for by the inclusion of the two agricultural agencies. This indicates that the action by the Legislature of Puerto Rico is indeed significant.

Table 5.7. General Fund Budget of the UPR Compared to UPRM. Amended annually on June 30.*

Year	UPR	UPRM*	Percent
1994-95	\$467,891,080	\$84,960,459	18.16
1995-96	516,608,432	95,264,345	18.44
1996-97	571,578,387	117,067,495	20.48
1997-98	609,065,891	126,183,565	20.72
1998-99	626,640,112	127,036,841	20.27
1999-00	642,126,461	130,810,472	20.37

In addition, the consolidated UPRM budget for operating expenses increased from \$141 million in FY 1995 to \$184 million in FY 2000. This increase of \$43 million represents a 31% growth. Table 5.8 details the UPR consolidated budget for operating expenses from 1994-95 to 1999-00.

Table 5.8. Consolidated Budget for Operating Expenses – UPRM

Source of Funds	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00
<i>UPR General Fund</i>	\$84,960,459	\$95,264,345	\$117,067,495*	\$126,183,565	\$127,036,841	\$130,810,472
<i>External Sources</i>						
<i>Federal Government</i>	32,301,333	40,026,679	39,312,066	38,611,794	46,326,612	40,653,314
<i>State Government</i>	19,413,394	17,698,864	2,959,832	4,093,346	1,998,615	3,872,064
<i>Private Institutions</i>	3,073,496	4,201,636	4,072,626	3,086,510	3,182,654	5,240,128
<i>Self Earnings</i>	1,075,134	4,577,495	5,613,016	5,332,712	3,727,910	3,851,185
<i>Others</i>	204,524					
TOTAL	\$141,028,340	\$161,589,019	\$169,025,035	\$177,307,927	\$182,272,636	\$184,427,163

In the period covered by this report the Central Administration imposed several budget cuts in FY 1998-99 and 1999-00. These cuts amounted to \$5.3 million. Table 5.9 describes these reductions by year, unit, and reason.

Table 5.9. Cuts in the UPRM Operational Budget

Description	Campus	EEA	SEA	Total
1998-99	\$1,315,283	\$76,612	\$129,510	\$1,521,405
Early Retirement				
1999-00	1,135,121	179,468	93,721	1,408,310
Early Retirement				
2% Economy	1,963,102	222,056	210,300	2,401,458
TOTAL	\$4,413,506	\$478,136	\$439,531	\$5,331,173

The cuts related to early retirement in FY 1998-99 and 1999-00 consisted in freezing the positions of the personnel who took the advantage of the early retirement window and having the Central Administration take back the resources. In those cases which required substitute personnel to be hired, the positions were unfrozen, but the cost had to be absorbed by the Campus, thereby duplicating the costs. This situation affected the administrative deans adversely. For example the

Office of the Dean of Students had two secretaries retire at the same time and the replacements had to be paid from the operational funds.

Moreover, the recurring budget continued to be affected by actions taken by the university but for which no resources were assigned. These obligations had to be covered, limiting even more the capacity of the UPRM to finance the strength of its services and academic initiatives. Various examples can be given here:

- The Christmas bonus was increased by \$50 in each of the years in question. The Central Administration assigned funds to cover this on the base of the number of tenure and tenure track employees. The accumulated loss to FY 1999-2000 was \$305,667.
- The employer's share of the cost of the health insurance for employees rose from \$2,640 in 1998 to \$3,000 in 2000. Additional funds were never assigned. By June 30, 2000 the accumulated loss was \$613,436.
- For years the Campus had \$425,000 for promotions for the teaching faculty. When the two agricultural dependencies were added, the same amount was distributed among the three units.
- When substantial raises were given to all teaching and administrative personnel throughout the system, for FY 1998 the Central Administration covered the cost of the raises only for permanent and probationary personnel, generating a recurring deficit of \$693,293.

As a result of these projects the economies reported in the 1995 MSA report have disappeared, of which those generated in salaries were used at the end of the fiscal year to cover the costs of permanent improvements and equipment purchases. The last project paid for this way was improvements to the cafeteria, which included installing an air conditioning system. In FY 1999-00 requisitions had to be canceled to balance the operating funds of the General Fund. However, the summer school program, one of the major activities funded with these economies, was not adversely affected because the Central Administration had promised the financing since 1995-96.