



Memorandum of Understanding between

Worcester Polytechnic Institute
Worcester, MA, 01609

and

The University of Puerto Rico, Mayaguez Campus
Mayaguez, Puerto Rico, 00681-5000



Vision Statement

Worcester Polytechnic Institute and the University of Puerto Rico share common visions and goals in educating students in science and engineering and have determined to actively respond to the new strategic needs of the Nation for science and engineering research and education, as outlined by the National Science Foundation. Therefore, they wish to establish an agreement for collaboration and partnership in research and education, and for the exchange of students and faculty. In addition, Central to this agreement is the establishment of a *WPI/UPRM Collaboration and Project Center* at Mayaguez which will facilitate and oversee this collaborative effort.

We, the undersigned, have reviewed the terms of the attached Agreement which is aimed at promoting educational and research cooperation for our students and faculty, and will enhance the educational and research programs at our respective institutions. We agree to explore and implement the goals and the objectives outlined in this Agreement. We understand however, that this Agreement can be revoked at anytime, with six months' advance notice required before the beginning of each academic year, should any of our respective institutions decide not to continue this cooperation.

We sign this *Memorandum of Understanding* in recognition of our common interests and as a token of our goodwill.

Signed:

Dr. Stuart Ramos, Chancellor, UPRM
Also representing Dr. Norman Maldonado,
President, University of Puerto Rico.

Dr. Edward Parrish, President, WPI

Dr. Manuel Gómez, Director of the Center
for Resources for Science and Engineering.

Signed on the 9th day of November, 1995.



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and
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Mayaguez, Puerto Rico, 00681-5000
and the



Establishment of WPI-UPRM Center for Collaboration and Projects at Mayaguez.

Background and the Rationale

The University of Puerto Rico was founded in 1903 by an act of legislative assembly. It now has three main campuses that are dedicated to both undergraduate and graduate studies. These are the Mayaguez, the Medical Science, and the Rio Piedras campuses. Also included in the system are the University Colleges of Cayey and Humacao, which are four year colleges, and the Regional Colleges Administration that gathers four two year colleges and two technical four year colleges. The three Campuses and the Regional Colleges Administration are all autonomous. Presently the University has a total enrollment of 50,000 students.

The University of Puerto Rico at Mayaguez (UPRM), is an outgrowth of the College of Agriculture at Mayaguez, established in 1911. Over the years, the university was expanded and diversified to include colleges of Agricultural Sciences, Art and Sciences, Business Administration, and Engineering. Today, the University body includes over 640 faculty members and researchers, 322 visiting, affiliates and adjunct staffs, and about 12,000 students. It has emerged as a coeducational bilingual, and nonsectarian school.

The UPRM is the largest engineering school in the entire Latin America. It also has the largest concentration of Hispanic faculty with Ph.D. degrees (60%) among all engineering schools in Latin America. The university provides for over 20% of Hispanic engineering work force in the United States and has the highest percentage of female students in science and engineering (over 32%) among all science and engineering schools in the US. It also serves as a *technology transfer center for Central, North, and South America*. Parts of these efforts are coordinated through the Hemispheric Cooperative Center, or *CoHemis*. In addition, there are a number of engineering centers associated with the university that seek solutions to the most pressing technical problems facing the Island. These include Natural Hazard Mitigation Institute, or *NHMI*, and Civil Infrastructure Research Center, or *CIRC*. The centers come under the umbrella of the *Research and Development Center (RDC)*, that aims at coordinating and promoting research efforts of UPRM. The engineering centers compliment numerous research laboratories that are under direct faculty supervision. Many researchers from the South and Central America are actively involved in collaboration with their counterparts from the UPRM. The strategic location of the University has attracted many graduate and undergraduate students from these areas. In fact, more than half of current engineering graduate students at UPRM are foreign born.

This Agreement and the establishment of WPI/UPRM Center in Mayaguez will open an exciting window of opportunity to researchers from WPI to recruit and to collaborate outside their hemisphere. Both WPI and UPRM will benefit from a joint effort as the US government and the private sector are promoting graduate studies and research training among minority students and partnership among academic institutions and industry. Especially useful to UPRM is the WPI's long history and experience in pioneering project-based education and multi-disciplinary and

fundamental research programs aimed at the needs of the "end-users." There is enormous enthusiasm on the part of UPRM faculty and administration to support joint research and educational programs with WPI. These programs can be used to devise a new and innovative model of research and education and joint graduate programs, not only for the UPRM, but for the Central and South Americas.

Other opportunities and strengths that this collaboration could capitalize on include but are not limited to:

- ◆ National Science Foundation has identified the goal of promoting science and engineering education among minorities as one of the important strategic goals for the science and engineering research and education for the next decade. NSF and other Federal and private agencies have initiated aggressive campaigns to promote minority participation and recruitment into engineering and science. One of the Strategic Goals of WPI has been to address the same issue. UPRM does not offer doctoral degrees in most of its science or engineering disciplines. This provides an opportunity for WPI to utilize UPRM as a feeder institution for recruiting high quality minority students to various graduate programs. Through a WPI/UPRM collaboration, WPI can establish itself as a major university for the training of minority doctoral students who, as part of their education, are trained to become engineering educators with expertise in project-oriented education. There are numerous opportunities to receive funding for programs that aim at recruitment of minorities to graduate education and research.
- ◆ the high percentage of women in engineering and science, over 32%, provides a unique opportunity to recruit minority female students to graduate programs in engineering and science.
- ◆ WPI can actively participate in developing graduate programs in science and engineering at UPRM through establishing joint graduate programs with that institution. A comprehensive joint graduate program with UPRM can establish this collaborative team as a leader in the engineering/science education community with the largest participation of underrepresented groups and will be a bold step in responding to a national strategic goal. It will be up to individual departments and academic units at the two institutions to work out the details for these joint programs.
- ◆ UPRM students have a strong academic training and background in science and engineering. The undergraduate engineering program is a five year degree program with a strong emphasis on technical courses and projects. This provides a very competent and high quality pool of applicants for advanced degree programs.
- ◆ UPRM has already established relationships with several major leading engineering schools in the US and is actively trying to establish new collaborations with other US institutions. Several major universities have started exploring this opportunity. WPI has several alumni who are faculty members at UPRM Mechanical and Civil Engineering. These colleagues are willing to help and support the collaborations between WPI, UPRM, to establish ties with other universities, and to develop a multi-university collaboration. WPI/UPRM center can take the lead in the formation of a multi-university partnership. Such partnership could receive the endorsement of the NSF and other federal funding agencies. In this particular form, such collaboration involves the participation of the largest minority institution in the North American Continent as a major partner. There are several NSF and other federally supported research

centers, local funding agencies, and private sectors that are potential sources to support joint research projects proposed by this partnership.

- ◆ Puerto Rico is the gate-way to the entire Latin America. Many institutions in Latin America are exploring collaboration opportunities with UPRM to develop engineering and science programs at their own institutions by sending students to Puerto Rico to be trained. An initiative is presently being pursued to establish UPRM as a center for graduate training and to attract students from several Latin American countries and for the training of future leaders in technology transfer. Opportunities for financial support are available through arrangements provided by NAFTA and similar agreements. Since UPRM does not have the resources for developing advanced graduate programs leading to Ph.D. degree, they are seeking the help of US institutions for establishing such "bridge programs." WPI should take advantage of this opportunity. Besides, WPI has dedicated alumni at UPRM who are willing to coordinate these "bridge programs." Additionally, WPI can extend several of its industrial research centers and consortia, such as the Center for Powder Metallurgy, Materials Processing, and Biotechnology to UPRM. These centers can establish themselves as major research and educational centers in Puerto Rico, jointly administered by WPI and UPRM, and can attract researchers and industries from the entire Latin America. These centers will enhance the international visibility of WPI and UPRM and will establish the two institutions as leaders in these research arenas in the entire Latin America.

History of Recent Collaborations between WPI and UPRM

The first attempt for establishing a collaboration between WPI and UPRM was undertaken in academic year 1991-92 when an Agreement of Cooperation was exchanged between the offices of WPI President and UPRM Chancellor to facilitate student and faculty exchange between the two institutions. Unfortunately, since this effort did not involve or utilize our most valuable resources at UPRM, the WPI alumni, was not the result of a feasibility and experimental study, and did not include the faculty or the academic departments at either institution, it was never effectively materialized. In May 1994, after over a year of feasibility study by two dedicated WPI alumni, Drs. Davoodi (Assoc. Prof. of Mechanical Engineering) and Ali Saffar (Assoc. Prof. of Civil Engineering) at UPRM, a two-day workshop and meeting was organized, and WPI-ME Dept. Head was invited to UPRM to present an overview of WPI educational programs and to explore opportunities for collaboration between WPI and UPRM. This visit included meetings with the faculty and administrators from several academic programs at UPRM and the UPR Central Administration, and discussions for education and research collaborations between the two institutions. This visit was very successful and received the overwhelming support and the endorsement of UPRM Chancellor, Deans, Academic Department Heads, and Faculty from several departments including Mechanical, Civil, Electrical and Industrial Engineering and Business Administration. In addition, the central administration of UPR, and in particular Dr. Manuel Gomez and Professor Tomas Flores, offered their unconditional support and endorsement for any effort that would establish ties between UPR and WPI. Subsequent to this visit, specific initiatives were undertaken to explore the possibility for developing a major collaboration. The assistance and dedication of Drs. Davoodi and Saffar in facilitating these activities were *essential* in the success of this first essential step.

Thus, this agreement is the outcome of an effort that began over two years ago between the WPI Mechanical Engineering Department and numerous colleagues from several academic programs at UPRM. This effort has so far resulted in the following noteworthy collaborations: @ the Third International Stochastic Structural Dynamics Conference, held on January 15-18, 1995 in San Juan, organized jointly by WPI, UPR and Rice universities and sponsored by NSF, ISF,

Xerox, Exxon and numerous industries; ② recruitment of two undergraduate students from UPRM who participated in NSF/REU program in Summer 1995, in Mechanical Engineering Department at WPI; ③ recruiting two students from UPRM who started their graduate studies in Mechanical Engineering at WPI in Fall 1995; ④ three research proposals and a fellowship proposal submitted jointly by WPI-ME faculty and UPRM faculty from Chemical, Industrial and Mechanical Engineering programs, to NSF, NRC, and ONR; ⑤ participation of WPI-ME Department Head, representing WPI and as a keynote speaker, at the Global Awareness Conference, an International Invitational Symposium held at UPRM, on September 1-2, 1994 with a focus on "Integrative Education for Engineers" and "Impact of Global Developments on Engineering Education"; ⑥ a two-day visit by a team of faculty and administrators from UPRM to WPI in July 1994. This team explored the opportunities for collaborations with several programs at WPI; ⑦ a two-month summer research program at UPRM with the participation of the first WPI student (an ME Senior) and one UPRM faculty member in this program; ⑧ joining of UPR President, Dr. Maldonado, as a member to the WPI-ME Advisory Board, ⑨ participation of UPRM as a co-sponsor, in the Organization of the 7th ASCE Specialty Conference on Probabilistic Mechanics and Structural Reliability to be held at WPI, August 7-9, 1996, and ⑩ development of a plan for establishing a WPI/UPRM Center of Collaboration and a formal agreement to facilitate the exchange of students and faculty, joint graduate programs, and joint project and research between UPRM and WPI. Initial funding for the establishment of this Center has been provided through a generous contribution and support by the Office of Dr. Maldonado, President of UPR, Dr. Ramos, Chancellor of UPRM, and with partial financial support acquired by Drs. Davoodi, Saffar, and WPI-ME Department from Xerox, NSF and several industries.

ESTABLISHING WPI COLLABORATION AND PROJECT CENTER in MAYAGUEZ

Central to this Agreement is the establishment of a *WPI/UPRM Collaboration and Project Center* on the campus of UPRM. This Center will become an avenue for facilitating and promoting the exchange of undergraduate and graduate students, conducting joint research projects and graduate programs, and other academic cooperation, in which both faculty and students from WPI and UPRM will participate. The proposed site is in an ideal location in a new building on UPRM campus. This Center will encourage participation of all academic programs in this collaborative effort. Thanks to the efforts of Professor Davoodi and Saffar, from UPRM Mechanical and Civil Engineering, and Professor Lueny Morell Ramirez, Assistant to the Chancellor for Academic Affairs and Professor of Chemical Engineering, and the endorsement of Dr. Stuart Ramos, Chancellor of UPRM, the plan for the establishment of the Center at UPRM is well under way. This past summer, through a grant from Xerox Corporation, one WPI Mechanical Engineering student spent the summer at UPRM and as part of her project assignment and with the assistance of the Professors Davoodi, Saffar and Morell, developed the ground work for the opening of the Center.

The immediate and the long-term goals of the Center are: 1) to facilitate and coordinate joint undergraduate and graduate research and education projects, involving students and faculty from WPI and UPRM; 2) to promote and develop a research environment from which the minority students benefit. This will be accomplished by developing joint graduate degree programs between UPRM and WPI; 3) to facilitate faculty and student exchange between the two institutions; 4) to encourage local and corporate businesses, federal agencies, and other universities to participate and support the development and the strengthening of research infrastructure at UPRM by supporting this Center and this partnership and other industrial and educational partnerships resulted due to the activities and under the supervision of this Center, and 5) to work with the UPRM-RDC and its affiliate centers to attract the participation of Latin American universities and industries in support of the mission of the Center.

This Center will oversee, facilitate and promote all joint activities between the two institutions. All collaboration efforts between the two institutions will be arranged through this Center and its Directors. The Center will seek financial support from federal agencies and industrial sectors with the help and support of WPI and UPRM faculty and administration. Following is a more detailed description of the various activities of this Center.

PROPOSED TERMS OF AGREEMENT

Based on the initial success of the joint efforts between WPI and UPRM, the following plan will be pursued by WPI and UPRM:

1. The Center will have a permanent location on Mayaguez campus. UPRM will provide the office space, telephone and computer lines, and the related infrastructure needs for the Center. A partial funding by Xerox Corporation and NSF has provided support for the computers, fax, and other necessary office equipment already purchased. WPI-ME Department has also made commitment to provide funds for the purchase of office furniture and some other needs of the Center. Some financial support for the Directors and a half time secretary need to be provided, initially, for administering and operating the Center. WPI-ME Department has raised funds to provide this initial support. UPRM will provide the physical space and the related infrastructure needs for this Center. It is foreseen that eventually the external funds be raised to provide the financial support needed for the directors and the operation of this facility. Such expenses should be considered in the proposals submitted by the WPI collaborators involved with and supported by this Center and may include administrative costs associated with the Center such as a part-time secretary. Three faculty members, identified by the Office of the Chancellor in consultation with WPI, will be the Board of Directors of this Center. All joint proposals to funding agencies, facilitated by the Center, should include in their requested budget -if the funding agency allows- the administrative, material, and other expenses associated with the Center. In addition, WPI will support undergraduate project students at UPRM based on the current policy of WPI for project centers at other locations.
2. The Center will facilitate joint efforts between WPI-UPR researchers by creating a data base on research interests of UPR and WPI faculty. Research topics which strengthen the existing major research areas at UPR and will enhance the quality of undergraduate and graduate programs at UPR should be given preference. Any WPI or UPR faculty member, upon request, will be provided this list and the Center will match the research interests. The Center will provide information on any opportunities and resources available to support joint research and collaboration between UPR and WPI faculty. In addition, the Center with the assistance of WPI and UPRM faculty and administration will identify resources and opportunities for acquiring external support to finance the Center and the collaboration activities. Joint research work between WPI faculty and research centers at UPRM, including the NHMI, and CIRC, will be facilitated and encouraged. Percentage of the faculty at UPR who hold doctoral degrees in science and engineering is the highest among all universities in the Latin America. This provides a good opportunity for research collaboration. The Center can help WPI to extend its research centers of excellence, such as Center for Powder Metallurgy, Biotechnology, etc. to UPRM. These centers will attract researchers and resources from the Central and South Americas. Center will facilitate the collaboration of these consortia with Latin American countries. This will be a unique opportunity for WPI to establish strong visibility, through these research centers, in Latin America and attract students, researchers and government support from those countries. Research needs of Puerto Rico and Latin America should have the priority and should be the focus of research projects that the Center

will endorse. All other possible forms of collaborative research and education will be encouraged and facilitated by the Center.

3. The Center, under the supervision of the Directors, will initially manage the operations for a maximum of one Major Qualifying Project and one Interactive Qualifying Project team of students per semester (2 in a year). Since the focus of the Center will be on MQP projects and research collaborations, these projects will have preference over IQP's. The WPI part of the team will consist of one project advisor and a maximum of 10 students. In case of MQP projects, it is preferred that students spend one semester (equivalent of two WPI terms) in Mayaguez. It will be preferred that WPI MQP teams spend the first seven week at WPI and the following semester (2 WPI terms) at UPRM. In such a case, during their stay at UPRM, WPI students will need to take 4 courses in addition to their MQP work. The project teams will involve WPI and UPRM students and two co-advisors, from WPI and UPRM respectively. On-site stay of WPI advisor during the entire course of the project may not be necessary.
4. UPRM will provide housing for WPI students and their advisor. The student housing will be secured in Darlington Apartment building, a UPRM administrated boarding for first year professors and graduate students. In order to guarantee the availability of the space, WPI should make appropriate arrangements with UPRM, one year in advance, how many apartment units are needed. Another alternative solution is that WPI may contract to maintain three of these apartments year round. Such expense will be reimbursed by the students who would stay at those apartments. Each apartment is furnished and can be used by a maximum of three students. Similar or alternative arrangements can be made for the advisor.
5. The project topics for each team of students will be selected by WPI/UPRM advisors. It is expected that most of these projects will be **externally funded**. The Center will utilize WPI expertise in dealing with local industries to promote partnership. The research activities conducted by the supervision of the Center (MQP, or graduate projects), will enhance the research identity of UPRM. The center and its activities will strengthen the research infrastructure of the Island and will be received favorably by the local industry and will attract their partnership and financial support. The Center will schedule the teams based on the availability of funds and time-tables for the individual projects.
6. For every team of WPI MQP students, there will be a team of UPRM undergraduates, working jointly on the same project. The UPRM students will register for one session of the capstone design course required in all engineering disciplines. They will be screened and selected by the UPRM advisor based on their background and interest. Since there is a large pool of students to select from, the selected final group will be very competent. The UPRM advisor will receive partial release time from the UPRM for coordinating a capstone course in accordance with UPRM regulations. In case of externally funded projects, additional compensation will be provided to the faculty advisor. This will encourage the faculty to pursue sponsorship of industry for the projects. This new type of team projects will provide a unique cultural and educational experience for WPI and UPR students, enhances the scope of project programs, and UPRM and WPI students and faculty will benefit from this collaboration. The WPI/UPRM joint MQP and undergraduate projects will become a role model for other universities to learn from. WPI projects, sponsored by industrial project centers, e.g. Norton Project Center, are very suitable for joint MQP projects involving UPRM students. UPRM students, who are interested in exchange programs, can participate in these projects which will be counted as their Capstone Design Projects. WPI exchange students can participate in team projects such as SAE Formula Car, jointly with UPRM students. These joint projects can be coordinated such that WPI students spend the final two terms in Mayaguez, after a one-term preparation at WPI. Participation of WPI and UPRM students, as a joint team, in the national contests for these major design projects will be a valuable cultural experience and will enhance the visibility of WPI and UPRM at the national scene.

7. The Center will identify various funding opportunities through NRC, Ford Foundation, NSF, DOE, etc. for doctoral fellowships, and will encourage qualified UPRM students apply for these programs and with the goal of attending WPI for their doctoral studies, with the help of WPI faculty. In addition, with the help and experience of WPI, industrial fellowships for the support of doctoral and graduate education at WPI for UPRM students will be actively pursued.
8. The Center will facilitate and seek the help of WPI to assist UPRM faculty and academic programs with curricular developments. Joint proposals for the development of innovative educational programs and curricular innovation will be facilitated and encouraged.
9. For each project two versions of the report will be required. The initial draft and the WPI report will be in English, and a second copy for the Center will be in Spanish. The initial draft will be prepared by all members of the project. The UPRM students will be responsible for the Spanish version. Copies of the report will be available to public and industries in the island, Caribbean base and Central and South Americas.
10. The Center will facilitate other joint undergraduate and graduate programs between WPI and UPRM faculty members, involving students from both schools. These joint projects may include but are not limited to: NSF/REU projects proposed jointly by WPI/UPRM faculty, MS theses projects conducted as joint efforts between the faculty from WPI and UPRM (facilitated by the Center), and externally sponsored projects carried out by teams of WPI/UPRM faculty. These efforts will promote research and graduate studies among UPRM students. Similar arrangements such as summer research exchange programs can be worked out for undergraduate students from the two institutions. These summer research programs will motivate undergraduate students to pursue graduate education. Financial support can be acquired by various programs/centers at UPRM or through writing joint proposals to programs such as NSF/REU. The Center will identify and seek financial support from government and industrial agencies for joint educational programs between UPRM and WPI.
11. The Center will facilitate development of *joint graduate programs* between WPI and the *University of Puerto Rico*. The Board of Directors will work closely with WPI-ME Department to develop a plan for such joint programs. Procedural issues for these joint programs will be outlined after a feasibility study is conducted through active communication between the aforementioned parties and a specific plan for this proposed joint program will be submitted to both institutions as an addendum to this present Agreement. Typical arrangements, that can be considered for this feasibility study maybe as follows:
 - a) UPRM students could be admitted with financial support to WPI. Financial support can be in form of Teaching Assistantship or Fellowships arranged by various departments at WPI. WPI departments can set aside several teaching and research assistantships for qualified students from UPRM. These students will complete, in two-three years, their course work and part of their dissertation;
 - b) upon completion of course-work and initial work on dissertation, the students will return to UPRM and will be hired by UPRM as doctoral instructors and will teach courses and advise projects at UPRM, as Teaching Fellows. Industrial and university support will be acquired for this arrangement.
 - c) depending on the area of research, a faculty member is identified by UPRM as the Ph.D. co-advisor. The doctoral instructor will also be involved in project advising;
 - d) towards the final stages of completing the dissertation work, WPI Ph.D. co-advisor will visit UPRM for a period of 2 to 7 weeks. During this stay, the final stages of dissertation work will be discussed between the WPI and UPRM co-advisors and plan for final defense takes place. The final defense will be at WPI or UPRM depending on the arrangements for dissertation committee. The Ph.D. degree will be granted as a joint degree between WPI and UPRM. A promising and feasible "bridge" doctoral program can be in Civil Infrastructure

Systems utilizing faculty expertise from WPI and the CIRC research center in Mayaguez. This innovative and strategically important doctoral degree will have the endorsement of NSF.

12. WPI faculty are encouraged to offer short courses of interest to Puerto Rico industry or to the University. The Center will identify the type of courses or the topics needed. In particular arrangement for these courses can be made such that during the time period of 2-7 weeks WPI-Ph.D. advising faculty may offer accelerated advanced courses at UPRM. Arrangements for the housing and compensation for WPI faculty who will be teaching these short courses will be worked out according to UPRM regulations. WPI offers Advanced Certificate Programs in several areas. Requirement for receiving these certificates is the completion of 5 to 6 graduate courses in a designated area of interest. Arrangements can be made such that through these 2-7 week stay of WPI faculty these Advanced courses are offered for full credit.
13. It is proposed that a feasibility study be carried out to review the possibility that WPI Ph.D. candidates or recent Ph.D. graduates can spend up to one year at UPRM to teach courses and to supervise projects as part of an innovative educational traineeship program. This will provide a valuable training experience for WPI Ph.D. candidates or recent graduates who will become Post-Doc Teaching Fellows, and will be an opportunity for the UPRM faculty to be released from teaching duties during that period and focus on their research work and joint research with WPI faculty. Financial arrangements for the compensation of WPI doctoral candidates and Teaching Fellows will be worked out according to UPRM regulations.
14. Exchange of undergraduate students can be arranged and should be encouraged. UPRM has a college of Liberal Arts and the exchange program provides a good opportunity for those WPI students who are interested in a broader selection of courses in arts and humanities. Besides, the Center can facilitate the possibility of a joint Liberal Arts degree program between WPI and UPRM. WPI and UPR agree to the following arrangements for these exchanges:
 - a) Both institutions will waive tuition fees for the exchange students in all programs.
 - b) One student from UPR attending WPI for two seven-week terms will be equivalent to one WPI student attending UPR for one semester. One student from UPR attending WPI for two seven-week terms will be equivalent to three students attending UPR for the summer term.
 - c) Students will be formally registered at their host institutions.
 - d) Students from both institutions will pay for the cost of travel and of room and board at the host institution. The host institution will assist the students in advance to make arrangements for room and board.
 - e) Exchange students can participate, by suitable advance arrangements, in off-campus programs sponsored by UPRM and WPI, as well as the main campuses at WPI and UPR. The exchange can also involve WPI students at any of the branch campuses of UPR outside Mayaguez. Both institutions can also involve well-qualified students from other universities in the WPI-UPR program.
 - f) UPRM students could receive a stipend toward airfare and for living expenses.
 - g) Both institutions will make their own health insurance program available to guest students if the students do not carry insurance through the home institutions.
 - h) UPRM students on exchange to WPI may participate in activities of the WPI-UPRM Collaboration and Project Center when there are places and opportunities available and when the students have participated in the regular preparation for projects undertaken there.
 - i) Students will work closely with their own academic advisors and other relevant professors prior to their stay at the host institution to exchange permission for the transfer of credits earned at the host university.
 - j) Students will be graded according to the system prevailing at the host institution.

15. Center, under the directorship of the Board of Directors, will establish an Advisory Board. The role of this Board will be to provide guidance and direction to the Board of Directors and UPRM administration for the development of new programs, operation and strategic planning for the Center. The Center's goals and plans are assessed and evaluated by the Board annually. Members of this Board can be selected from the membership of the Advisory Boards for the College of Engineering and faculty from the engineering departments. In addition, it is important to have a representative from the government of Puerto Rico, e.g. the Secretary of Transportation who has ties with UPR. WPI will help to identify and recruit distinguished members for this Board and will have a liaison member on the Board. The Advisory Board will help to identify areas of research that are of interest to the Island. It will also help the Center to identify undergraduate and graduate projects that benefit Puerto Rico industry and economy. The Center will prepare a yearly progress report. This report will be presented at an annual meeting of the Advisory Board, to which representatives from UPRM and WPI will be invited to attend, and will be published and disseminated to WPI and UPR academic and administration communities and to local and other industries that sponsor activities of the Center. It is hoped that such workshops will strengthen the industry-university partnership. The Center will maintain a record of past student participants. These students may be surveyed for outcome assessments.
16. Center will facilitate and promote Organization of joint international conferences on the issues that are important for the island, such as Civil Infrastructure Systems, Hazard Mitigation, and environmental issues, to cite a few examples. These joint conferences will enhance the international visibility of both institutions. The Third International Stochastic Structural Dynamics, jointly organized by UPRM-WPI and Rice University and held in January 1995 in San Juan, is a good example for the positive impacts of organizing such joint meetings. The Center will facilitate and promote these joint conferences. These conferences can generate revenues for the operation of the Center according to UPRM regulations.
17. UPR and the Center will be interested to support projects on technology transfer. These projects can be advertised at WPI, and WPI students and faculty advisors will go to UPRM and will work on these projects. Summer time is a feasible time-frame for IQP projects. There are numerous issues of interest for IQP projects on these technology transfer problems and other topics related to the socio-economic problems of the Island. UPRM-WPI sponsored projects can be a means to help the government of Puerto Rico with addressing societal problems. Some of these problems, potential IQP topics, include technology transfer to Haiti and the Latin America and Caribbean Countries through Puerto Rico, hazard mitigation, urban planning, erosion of beaches, etc. The Center will sponsor a technology transfer seminar series at the end of the term leading to the completion of projects. The industry and government representatives will be invited and the students will present the results of their work. In addition, the advisor will be asked to present a lecture on his/her area of expertise. Arrangements for IQP's will be coordinated with the WPI Project Center in San Juan to make sure there will not be a conflict with the activities of that Center. Presently, WPI operates a Project Center in San Juan, funded entirely by industrial sponsors. This Center administers IQP projects in the areas related to various socio-technological issues of the Island.
18. Faculty exchange between the two institutions will be facilitated and encouraged by the Center in order to facilitate research collaborations between WPI/UPRM. These exchanges will promote and facilitate opportunities for research collaborations between the faculty from the respective institutions. Such exchanges can take various forms. For example arrangements are made through the Center so that WPI faculty will spend sabbatical leaves at UPRM and during such periods, will offer graduate courses, supervise dissertation projects, and initiates research collaborations with UPRM faculty. In addition, other possibilities such as short courses, and other short term professional development and graduate programs as

discussed in other above items can be offered by WPI faculty at UPRM. Also, UPRM faculty can spend sabbatical leaves at WPI to work on joint research and educational projects. The Center will have information about programs, resources, and facilities, at both institutions. Each university will promote cooperation research by providing information to the Center regarding new research ventures and opportunities. Faculty, when at the host institution, will have access to all facilities usually available to regular faculty of that institution.

19. The Center will provide information to WPI faculty regarding housing. Faculty are responsible for their own medical coverage while at the host university, each institution will assist visiting faculty to make housing arrangements to whatever extent possible.