

Report to the
Faculty, Administration, Trustees, Students

of

Worcester Polytechnic Institute
Worcester, MA

by

An Evaluation Team representing the
Commission on Institutions of Higher Education
of the
New England Association of Schools and Colleges

Prepared after study of the institution's
self-evaluation report and a visit to
March 18 – 21, 2012

The members of the team:

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This report represents the views of the evaluation committee as interpreted by the chairperson. Its content is based on the committee's evaluation of the institution with respect to the Commission's criteria for accreditation. It is a confidential document in which all comments are made in good faith. The report is prepared both as an educational service to the institution and to assist the Commission in making a decision about the institution's accreditation status.

COMMISSION ON INSTITUTIONS OF HIGHER EDUCATION

New England Association of Schools and College

Preface Page to the Team Report

Please complete during the team visit and include with the report prepared by the visiting team

Date form completed: 3/19/2012

Name of Institution Worcester Polytechnic Institute

1. **History** Year chartered or authorized: 1865 Year first degrees awarded: 1868

2. **Type of control:** State City Other; specify: _____
 Private, not-for-profit Religious Group; specify: _____
 Proprietary Other; specify: _____

3. **Degree level:**
 Associate Baccalaureate Masters Professional Doctorate

4. **Enrollment in Degree Programs** (Use figures from fall semester of most recent year):

	Full-time	Part-time	FTE	Retention ^a	Graduation ^b	# Degrees ^c
Associate	0	0	0	NA	NA	NA
Baccalaureate	3627	119	3674	95%	80%	720
Graduate	613	944	974	88%	85%	418

(a) full-time 1st to 2nd year

(b) 3 or 6 year graduation rate

(c) no. of degrees awarded most recent year

5. **Number of current faculty:** Full time 290 Part-time 136 FTE: 335

6. **Current fund data for most recently completed fiscal year:** (Specify year: FY2011)
 (Double click in any cell to enter spreadsheet. Enter dollars in millions; e.g., \$1,456,200 = \$1.456)

Revenues

Tuition	\$92,221
Gov't Appropriations	21,990
Gifts/Grants/Endowment	5,748
Auxiliary Enterprises	19,639
Other	36,823
Total	\$176,421

Expenditures

Instruction	\$60,966
Research	15,899
General	40,234
Auxiliary Enterprises	8,837
Other	36,506
Total	\$162,442

7. **Number of off-campus locations:**

In-state 0 Other U.S. 0 International 0 Total 0

8. **Number of degrees and certificates offered electronically:**

Programs offered entirely on-line _____ Programs offered 50-99% on-line _____

9. **Is instruction offered through a contractual relationship?**

No Yes; specify program(s): _____

10. **Other characteristics:**

Introduction

This submission to the New England Association of Schools and Colleges (NEASC) reports on the Accreditation Team visit to Worcester Polytechnic Institute (WPI) and is intended to assist NEASC in the matter of continuation of accreditation for WPI. The Team visited WPI from March 18 to March 21, 2012. We were graciously received and warmly engaged by members of the administration, faculty, student body, staff and Trustees. The team enjoyed its time at WPI and hopes that this report will be received in the spirit of critical assessment, encouragement and acclaim in which it is offered.

The purpose of accreditation for American colleges and universities is both to provide quality assurance and to encourage institutions to work continuously to improve their performance and increase their effectiveness. The process involves both self-evaluation and subsequent peer review. For the review, WPI prepared a one volume self-study that was provided in both hardcopy and electronically. The visiting team found the self-study to be informative and helpful in understanding at a high level the character, qualities, and programs of WPI. Backup material was supplied in the team workroom. As appraisals should be the most significant part of the self-study, the team relied on the backup information in particular for data based assessment. The projection sections of the self-study offered forecasts and sometimes included appraisals. The appraisals should feed to projections and they in turn should state institutional commitments arising from the self-study that enhance strengths or address concerns and each standard should relate to institutional effectiveness.

WPI has undergone a period of rapid growth at all levels – undergraduate, graduate and corporate education. On the one hand this has provided significant short term financial resources while on the other hand challenges exist to expand WPI's operation and capacity to meet the demands of rapid growth. Notwithstanding its challenges, WPI is nonetheless one of the nation's truly fine technological institutions. The steady hand of President Berkey in guiding WPI through this period should be clearly recognized and applauded.

1. Mission and Purposes

Since its founding in 1865, WPI has emphasized the application of theoretical knowledge to practical, real-world problems. WPI's original purpose, as set forth in its Act of Incorporation, was to "aid in the advancement, development and practical application of science in connection with the arts, agriculture, manufactures, mercantile business and such other kindred branches of practical education as said corporation shall determine." The application of theory to practice has remained the cornerstone of WPI's mission. The Board of Trustees adopted the language of the present mission statement in 1987:

- WPI educates talented men and women in engineering, science, management, and humanities in preparation for careers of professional practice, civic contribution, and leadership, facilitated by active lifelong learning. This educational process is true to the founders' directive to create, to discover, and to convey knowledge at the frontiers of academic inquiry for the betterment of society. Knowledge is created and discovered in the scholarly activities of faculty and students ranging across educational methodology, professional practice, and basic research. Knowledge is conveyed through scholarly publication and instruction.

WPI's mission defines its distinctive character as a technological institution, addresses societal needs through its emphasis on the practical application of science to solve society's problems, and reflects WPI's traditions. The mission is the foundation of the undergraduate curriculum, known as the WPI Plan, which requires students to complete three major applied projects: one in their discipline, one that is interdisciplinary, and one that focuses on the arts and humanities. The mission is also central in WPI's eight Strategic Goals for 2007-2015. WPI's mission is appropriate to higher education, consistent with its charter, and gives direction to its activities.

WPI's mission provides a clear basis for assessment and enhancement of institutional effectiveness. Student learning is assessed through project outcomes that reflect the application of theory to solve practical problems. Faculty assessment for tenure and promotion is based on scholarly productivity, with scholarship broadly defined to include both basic and applied research, and teaching effectiveness, with teaching defined as including advising student projects and developing innovative teaching methods. As the self-study states, "WPI remains committed to continued educational improvement and innovation." The development of Gateway Park as a center for faculty research and entrepreneurial activity is a visible sign of WPI's commitment to research.

The full mission statement appears in its entirety on the WPI web site and in every undergraduate catalog (print and web versions).

Institutional Effectiveness: Although the mission statement appears to continue to serve WPI well, it has not been reviewed by the full WPI community for almost 20 years. WPI's 2001 self-study indicated that the mission does not reflect the college's commitment to global learning. The rapid growth of graduate programs, especially doctoral programs; the increasing emphasis on faculty research; and recent organizational changes also suggest a need to review the mission statement. A review by all constituencies would allow the mission to be updated if necessary. More importantly, perhaps, it would give the community an opportunity to reflect on its core mission and reaffirm its commitment to that mission.

2. Planning and Evaluation

In 1968, then-President George Hazzard charged a faculty committee with coming up with a plan for WPI's future. The ambitious and controversial effort took two years to draft and resulted in a document that continues to guide WPI today. New strategic planning initiatives were undertaken in 1999 and again in 2007. Prior to launching the 2007 strategic planning effort, President Berkey created seven commissions consisting of faculty, staff, and students to review and set the stage for strategic planning. Recommendations from these Commission reports formed the basis for a number of new initiatives. There is considerable evidence in these reports that the processes used were thoughtful, inclusive, mindful of previous efforts, and well publicized. All three documents remain publicly available today on the institution's website.

Each subsequent strategic plan builds upon the previous report, with the most recent report adopting five strategic goals from the 1999 report and integrating those into its list of eight strategic goals. In each case, the plans were collaborative efforts between the administration

and the faculty and the final product of the process was voted upon by both the faculty and the Board of Trustees.

The 2007 report guides discussion and other planning efforts. Each division has been asked to develop a list of key performance indicators that align with the eight strategic goals. These performance indicators will be reported regularly to the administration and the Corporation to provide data to support decision making. President Berkey makes annual progress reports to the Board of Trustees structured around the report's strategic goals and he engages the community in targeted initiatives, such as the President's Taskforce on Sustainability and the President's Council for the Support of Women and Minorities at WPI, to advance the specific goals. The plan is guiding the process of planning and implementing the current fundraising campaign, which has also engaged a broad constituency from its earliest stages.

Meetings with staff, faculty, and administrators suggest that the leadership of the organization effectively communicates its strategic vision as well as its challenges and opportunities. There appears to be a strong commitment to a shared vision of where the institution needs to go and an acceptance of the need to work together to address problems such as those resulting from increased enrollment.

Space planning is a collaborative effort overseen by relevant vice presidents and the provost and coordinated by the president's "Group of Five," comprises of the Provost, VP for Enrollment and Institutional Strategy, EVP/CFO, and VP for Academic and Corporate Development. Classroom space utilization is monitored and additional mid-size classrooms have been brought on line recently. The group continues to plan to meet institutional needs. Research space is assigned by the department heads and the provost with consultation of the EVP for financial considerations. The administration disbanded an academic space planning committee several years ago and the new instantiation will be an institutional planning committee.

Financial planning also involves the "Group of Five" with the EVP overseeing a five year rolling budget process and the other members assuring that academic and programmatic priorities and data drive the process of resource allocation. The need for faculty positions to support the curriculum are considered and decided upon during the summer before the outset of the budget process.

There is a plan specific to the library and one specific to information technology as well as many departmental self-studies from professional accreditations such as ABET and AACSB. The self-study notes that there are other forms of internal and external review for departments not covered by ABET accreditation. These reviews do not appear to be mandatory or conducted on a regular schedule. Consideration should be given to a more regular schedule of reviews for these programs.

The Office of Institutional Research has one professional staff person who is responsible for collecting, analyzing, and disseminating data about WPI. She ensures that they have uniform and consistent statistical information for official reporting and supports the institution's planning efforts. The Office makes data available on its website for members of the community to use in decision making. WPI benchmarks itself against comparable

institutions and continuously monitors and evaluates the validity of its data. The data available on the website focus on student related metrics. Data for other areas such as faculty, staff, research, and financial management are available from other offices.

Institutional Effectiveness: WPI has a remarkable history of institutional strategic planning. The effort and skill that has gone into these plans appears to have served the institution well in many ways and to have been relied upon in decision making and subsequent planning. Systems for collecting and utilizing data to support decision making are in place. However, the acceleration of enrollment growth ahead of plans has outpaced growth in faculty, staff, and the systems and facilities that will support increased enrollment, presenting a number of challenges that will need to be addressed.

3. Organization and Governance

WPI has organized structures for institutional governance that include a Board of Trustees (which is also referred to as the Corporation), a faculty governance system, student government, an alumni association, and the institution's administration. There are formal bylaws or constitutions for all of these except the administration. The authority of the administration is articulated from a variety of sources including the institution's policies, procedures, handbooks, and job descriptions, as well as in authorities allocated to individual officers from the institution's bylaws. The Provost is the chief academic officer, reporting directly to the Chief Executive Officer and is responsible with the faculty for all academic programs. The role and authority of the president is clearly articulated in the bylaws.

Distance learning programs as well as Corporate and Professional Education programs are integrated across the disciplines and are managed and overseen by the same faculty, committee and governance structures that apply to traditional programs.

The responsibility of the Board of Trustees is described as "ensuring that effective strategic and operational planning takes place, approving major expenditures and commitments, monitoring results against plans, and ensuring that WPI has effective top managers." This is consistent with the traditional role of oversight of such boards as distinguished from management functions appropriate for the administration. The Bylaws of the Corporation spell out in appropriate detail the roles, responsibility, powers, and standing committees of the board as well as procedures for meetings, membership, election of the chair and vice chairs, alumni trustees, and emeritus status. They meet at least three times per year, with additional meetings for some subcommittees and the Executive Committee. There are provisions for faculty, student, and alumni representatives. The board members that we met appeared to be mindful of the need to allow meaningful participation of these representatives.

The Bylaws are publicly available on the institution's website. The members of the Corporation that we met appeared to be very engaged, very conscious of their fiduciary responsibility, and very mindful of the appropriate role of the board. They explained that the board is made up of approximately two-thirds alumni and one-third members who were chosen from other sources to insure that the board had membership from the local area, appropriate industries, and appropriate backgrounds. Efforts have been made in recent years to add diversity to the board in terms of age, gender, and ethnicity. They have been conscious of the need to balance good governance while building Development capacity.

Board members expressed some concern in finding out of town trustees with sufficient commitment to the institution to attend regularly. The board has an orientation program for new members and designates an experienced member to mentor each new member. All members agree to abide by the institution's Conflict of Interest Policy.

The organizational structure of the administration is clearly detailed in the organizational chart. There are a number of mechanisms to assure cross-talk between various functional areas of the administration as well as between the administration and the faculty. These mechanisms help to assure that the academic mission drives decision-making and that appropriate administrative and financial support is provided to academic programs.

The Constitution and Bylaws of the Faculty were developed in 1970 in parallel with the development of the WPI Plan. There are provisions for revision as needed, with the most recent revision having taken place in 2011. Faculty governance is conducted through a committee structure with committees bringing motions for approval to monthly faculty meetings. Some members of the NEASC visiting committee attended a regular meeting of the committee chairs, which is held monthly. The committee chairs present were clearly very engaged and very thoughtful about the process. The agenda for the upcoming faculty meeting was substantial with many important matters coming forward for faculty vote.

Faculty meetings are chaired by the Secretary of the Faculty, who also represents the faculty at Board of Trustee meetings. There is a clear description of the role and responsibilities of each of the elected faculty standing committees, with a Committee on Governance empowered to resolve any questions of jurisdiction that might arise among the committees. Most committees meet weekly, distribute their minutes to the community, and produce annual reports. All of these materials are available on the faculty governance homepage. Each committee with responsibility for academic program development or academic operations has student representatives with full voting rights. Key administrators are either members or regular guests of committees relevant to their area of responsibility.

Recent growth in enrollment resulted in an increase in the number of non-tenure track faculty. The institution is wrestling with many issues surrounding this new category of faculty, one of which is their appropriate role in faculty governance. At this time, non-tenure track faculty members are considered staff members and are covered under the employee handbook rather than the faculty handbook. This raises questions not only with regard to such a substantial number of faculty members lacking voting rights but also with regard to protection of academic freedom. It was apparent from meeting with the faculty committee chairs that these issues are under active consideration.

There has been a transition in the organizational structure with the addition of the academic dean positions. Previously, the academic department heads reported directly to the Provost. It was apparent from our discussions that there continues to be some level of uncertainty over the appropriate roles of these deans. There is a plan to form a committee consisting of members of the faculty and the administration to draft and propose language to be inserted in the Faculty Handbook to better define the roles of these deans.

The student government also operates under a published constitution and bylaws, as does the Alumni Association. Reports from the few students that we met during our visit suggest that the student government is active and engaged. In recognition of the importance of information technology to both the academic and administrative programs of the university and the need for integration and coordination, there is an Information Technology Governance Committee that meets monthly to evaluate and prioritize information technology needs.

The Institution began reviewing its governance structures in 2009. This initiative led to the creation of a trustee and faculty committee called the Governance Task Force. They have engaged a consultant from the Association of Governing Boards to help them examine Board engagement, composition, and appropriate participation by students and faculty. This process was continuing at the time of our visit.

Institutional Effectiveness: It was clear from our discussions with faculty and with administrators that there is an active and vibrant faculty governance system. Faculty members seem to feel a real sense of ownership of and commitment to the institution and there is a shared sense of responsibility for the future of WPI. There appears to be good communication between the faculty, administration and the Corporation. Roles and responsibilities of all parties, with the exception of the recently added deans, are clearly articulated and well understood.

4. The Academic Program

Introduction: At the undergraduate (UG) level, WPI offers 33 bachelor's degree programs in engineering, the physical and life sciences, computer science, the mathematical sciences, business, the humanities and arts, and the social sciences. Thirty-one programs lead to a BS and two to a BA. During the last few years there have been several undergraduate majors added. All these majors are interdisciplinary programs with the largest being in Robotics Engineering and Interactive Media and Game Developing.

At the graduate level, WPI offers 37 master's degree programs in engineering, the physical sciences, computer science, the mathematical sciences, business, and the social sciences. There are 18 programs leading to the Doctor of Philosophy (Ph.D.) degree. New graduate programs are started in response to demand and emerging fields of study, while programs with low demand are phased out. In the last few years new programs have been added in Robotics Engineering, Learning Sciences and Technologies, Biochemistry, Interactive Media and Game Development and Bioinformatics and Computational Biology.

The Provost is in charge of the academic affairs at WPI. There are three academic divisions, Engineering, Arts & Science and a School of Business, with each division having a Dean assigned as the lead administrator. Programs are divided into 15 departments that are led by department heads. Departments list the learning goals and requirements for each of their programs that are consistent with the university. The procedures in place provides for effective academic oversight to assure the quality of the academic program fully engages the faculty in the decision process.

Decisions to commit resources strategically are tied directly to the 2008 strategic plan of the institution and to each department's missions and goals. Departments and divisions follow an annual cycle of evaluation that is tied to and helps inform the budget planning process. These budget requests come from the department faculty and the head to the dean before they are presented to the Provost. The Provost makes the decisions on allocation. This process appears to be working and has the endorsement of the chairs.

English as a Second Language (ESL) has a full time director at WPI. It is not contracted out. The ESL Program continues to be responsive to the trends and specialized needs of international students. WPI provides excellent support to international students.

WPI has demonstrated that undergraduate projects offered at off-campus project centers can be sustained and that new academic programming meets the standards of quality of the institution and the Commission's Standards and Policies. This includes the three capstone project areas (MQP, IQP and H&A), including work on-campus, off-campus and overseas. These projects are central to the WPI mission and provide the primary learning outcomes for their students. This curriculum was initially approved in 1970.

Undergraduate Degree Programs: Based on a review of the catalog, program goals, and program requirements and options, WPI's undergraduate academic programs are generally clear and coherent, with standards of achievement appropriate to the degrees awarded and well within the best traditions of academic programs in the respective areas. There are no prerequisites for any course. Students work with advisors to determine if they have the knowledge and skill level to enter into an upper level course. Any course can be taken by any student at any time. Without prerequisites, advising and mentoring are very important to prevent problems when students register for courses.

The "heart" of the WPI program is three capstone projects. These three projects define the primary learning goals of the students. Completed projects are one of the primary resources used in assessing student learning. The disciplinary capstone referred to as the Major Qualifying Project (MQP) is the required senior capstone experience, which demonstrates the ability of students in their major discipline. The interdisciplinary capstone referred to as the Interactive Qualifying Project (IQP) is typically completed in the junior year. Faculty members are involved with the design and implementation of the MQP and IQP and therefore have a significant role in all academic matters of content and quality in MQP and IQP off-campus applications. Past MQP and IQP reports can be found in the Electronic Projects Collection. The 7 week term is non-traditional but provides opportunity for students to dedicate entire terms to either of the capstone design courses, especially in projects done off-campus.

General Education: An important product available to assess student learning is the third capstone experience in the Humanities and Arts area, which is typically completed in the sophomore year. All students must take the H&A capstone, which either involves the Inquiry Seminar, which provides a more in depth evaluation of a humanities-related question, or the Inquiry Practicum, which emphasizes the hands-on practical application gained from the H&A courses. Every student completes the equivalent of a minor in Arts and Humanities.

General education course requirements cover 42 credits in arts and humanities, and sciences, including mathematics and social sciences and assure adequate depth and breadth for students. The assessment of the three very different capstone courses provides evidence of a student's competence in arts and humanities (H&A capstone), sciences including mathematics (MQP) and social sciences (IQP).

Graduate Program: There are no learning outcomes and program educational objectives reported for any graduate program. Graduate courses are not systematically assessed. Assessment of the student learning experience is based on several factors specific to the degree requirements. For instance with Ph.D. students the successful completion of the qualifying exams, comprehensive exams, referred publications, and defense of the dissertation on original research are considered an assessment of the student's performance. For a student receiving a M.S. degree, an assessment of student performance is the successful completion and defense of the special project or thesis. Measuring the success of a graduate student in completing these tasks is in keeping with accepted practice.

In 2009 the graduate school introduced a poster symposium to the WPI community which showcases the majority of master theses and Ph.D. dissertations. This is now a yearly event. The results of the symposium are offered in a detailed report which demonstrates that there is a high level of complexity, specialization and generalization. This is the one assessment for the graduate program available to the general institution and community at large.

Department heads are responsible for the resources necessary to operate graduate programs. There is a procedure in place to request faculty at the appropriate level to teach graduate courses, mentor graduate students and conduct research. Departments and divisions follow an annual cycle of evaluation that is tied to and helps inform the budget planning process. Heads work with each faculty member and determine the workload for each year that would take into consideration scholarship, teaching and service. The procedure seems to be effective for existing programs and has the support of the heads. Of concern is the lack of evidence that there is a clear understanding of the financial obligations for new faculty (salary and startup costs), teaching assistantships, course development, space, and equipment that are required with the addition of each new graduate program.

On-line courses are offered in special graduate areas like Fire Protection Engineer (MS) and System Dynamics (MS) as well as Environmental Engineering (MS), MBA, Management (MS) and Mechanical Engineering (MS). These on-line courses are developed and delivered by the same faculty who deliver the courses on the main campus.

The Division of Corporate and Professional Education offers off-site certificate programs as well as master degrees in areas important to the continuous education of the industrial workforce. Since 2006 there has been a steady increase in revenue showing the programs' ability to be sustained. Acceptance into these programs is equivalent to that of a full time WPI student. Every course has learning objectives and students are required to demonstrate competency before completion. The quality of the program is maintained by vetting every course through the WPI system, which requires approval from the Committee on Graduate Studies and Research. The program is continually assessed with the student, faculty and industry surveys.

All graduate programs are administered on the main campus. Programs once offered on the Southborough and Waltham branch campuses have been discontinued.

Integrity in the Award of Academic Credit: WPI divides the academic year into four seven-week terms (two in the fall and two in the spring) and a standard course schedule is three courses in each term. Every undergraduate course carries 1/3 unit of credit (with few exceptions) and the undergraduate catalog specifies that 1/3 unit should involve 15 to 17 hours of work each week of time on task, regardless of the time in lecture or conference or lab. The faculty expectation for every student is that 1/3 unit (or 3 credits) will require an average of between 15 and 17 hours each week. This is based on a one time student survey. Administrators and faculty disagreed about whether students responding to the survey understood that their estimate was to include the class contact time. WPI Undergraduate Outcomes Assessment Committee (UOAC) believes that the results of the survey were not accurate and underestimated a student's true time on task. A new survey to eliminate any ambiguity or misunderstanding with the main purpose of getting an accurate student estimate of their time on task is necessary.

Degrees offered by the institution ensure minimum degree requirements are 135 semester credits at the baccalaureate level and 30 semester credits at the master's level. The program of study at the undergraduate level can be accomplished in four years. Courses are offered as advertised electronically and in print. Transfer credits are processed by the Admissions Office, but the final decisions regarding transfer credit are made by the faculty in the appropriate academic department. All academic policies and procedures for the evaluation of transfer credits are published on the web and in the catalogs.

WPI has articulation agreements with three community colleges in Massachusetts. These programs are reviewed each year by both faculty from WPI and the community colleges. These agreements are only available through WPI admissions office. They should be placed on the web.

WPI does not give credit for work experience nor does it give credit for pre-collegiate level or remedial work designed to prepare the student for collegiate study.

Credit allocation between graduate and undergraduate courses is a new policy passed by the faculty in 2010. Undergraduates will get 4.5 credits towards their bachelor's degree for every 3 credit graduate course and graduate students will get 2 graduate credits towards their degree for every 3 credit undergraduate course. This is a sweeping change that covers all graduate courses. Since it has recently been approved by the faculty, it is just now being implemented. Steps must be taken to make sure the undergraduate students' time on task meets the definition of WPI's credit assignment.

Graduation requirements are identified in print and on the web. Students work closely with advisors throughout the students' four years. Graduate certification is completed by faculty committees in each department who then recommend students to the registrar for graduation. There was some concern voiced by students that since meeting with an advisor was not mandatory some students' self- advised which led to problems.

WPI follows a non-traditional 7 week term rather than the traditional 14-15 week semester. There were no issues raised by students to indicate that 9 credits (3 courses) over 7 weeks compared with 15 credits (5 courses) over 14 weeks prevented them from having sufficient time to do other things outside of school.

Assessment of Student Learning: Institutional learning outcomes were adopted by the faculty in 2004. With this adoption came a detailed assessment plan which led to the faculty approval of the creation of the Undergraduate Outcomes Assessment Committee (UOAC). WPI relies on the evaluation of student performance in the required projects (IQP; MQP; and the Humanities and Arts project) as the primary measure of student learning. The UOAC reviews assessment data of various kinds and summarizes survey data for the institution. Undergraduate learning outcomes are clearly listed describing what students are expected to be able to do after completing the MQP, IQP and H&A capstones and on graduating from the programs.

WPI's is continually reviewing and assessing learning outcomes and implementing change to improve the student experience. An excellent example is in the recent addition of the Great Problem Seminars (GPS) in 2007. The faculty has long recognized the need to bring the student project experience to the freshman year. This was reinforced by the NSSE study results, summarized by the UOAC, which indicated "WPI students reported lower levels of active and cooperative learning in courses than the level reported by AITU peers" for first year students. The result was the GPS initiative. The GPS has been consistently reviewed since its inception by an external consultant. Improvements and expansion of the GPS experience is ongoing as a result of these assessments. The GPS has been so well received by the freshman, a major expansion in the offering to ultimately engage the entire freshman class is being considered. Learning outcomes are being developed for the GPS.

WPI has systematically reviewed the IQP program and has provided positive steps to correct the challenges identified. Internal IQP reviews occurred in 2000, 2004 and 2007 and an external review in 2010. The most recent full review of both on and off campus IQP projects occurred in 2000. From the 2000 review it was clearly evident that the major concern was with respect to the quality of student experience in the on-campus projects. Approximately 64% were rated below acceptable. On the other hand, almost all off-campus experiences were rated as acceptable to excellent. In 2004, a review of 87 reports (57 on-campus and 30 off-campus) was completed. Results basically confirmed those determined in the 2000 review that students completing on-campus IQP projects had unacceptable levels of achievement compared to students completing projects off-campus. IQP learning outcomes were passed by the WPI faculty in 2007 and were consistent with the 2004 Institutional Outcomes. A review in 2007 of only the on-campus IQP reports was mapped to the IQP and institutional learning outcomes. The results were similar to the earlier findings.

A series of initiatives were instituted by the Interdisciplinary and Global Studies Division (IGSD) to address on-campus project challenge, including online advisor resources, workshops and seminars for IQP advisors, and a mentoring program for new faculty. Through the Worcester Community Project Center (WCPC) on-campus projects now have an external sponsor that allows students the opportunity to gain valuable learning experiences similar to their off-campus peers. Expansion of this program to include more students and create a similar link to the food security in Central Massachusetts is being pursued. These

efforts are admirable, but impact on the students has yet to be determined. The review in 2010 was simply a summary of interviews conducted on campus. There has been no significant assessment data collected for comparison to the 2000, 2004 or 2007 data. Those data are needed to see the impact of these initiatives on on-campus student performance.

The MQP review is undertaken by each department with a rubric established by its faculty. The time line that each department follows is not clear although it is indicated that reviews are done every two years. The results of these reviews are used internally by departments to improve the MQP. All department MQP reviews clearly define strengths and weaknesses and provide recommendations both to faculty and students. These reviews and the analysis used to reach conclusions are not consistent between departments. They vary from a single survey with limited analysis to a very detailed review that includes student surveys and both advisor and reviewer project evaluations. Student presentations at the Project Presentation Day have provided an opportunity for some departments to judge the students' oral and visual presentation skills. All engineering departments map their outcomes to ABET outcomes. A few departments map their assessments directly back to the WPI Learning Outcomes, but most do not. All departments need to map their department outcomes back to the MQP learning outcomes as well as the institutional learning outcomes.

Recent revisions to the Humanities and Arts requirements were approved by the full faculty in 2008. The assessment program is under development. Learning outcomes for the H&A Practica or Inquiry Seminar are being developed and future reviews by the institution should focus on mapping the assessment results to these outcomes as well as the institutional learning outcomes.

Institutional Effectiveness: The three capstone projects (MQP, IQP and H&A Inquiry Seminar or Practica) are at the heart of the WPI Plan. With the addition of the Great Problem Seminar (GPS), WPI has now successfully placed project oriented learning in each year of an undergraduate's education (MQP-Senior, IQP-Junior, H&A-Sophomore; GPS-Freshman). Although the GPS is not yet required of every student, plans are to steadily increase student capacity. The GPS is a major accomplishment and is an excellent example of an institution-wide response to student and faculty assessments. The primary learning outcomes of the institution are tied directly to the success of these four capstone projects.

There is a consistent and systematic effort to assess all programs on a regular basis through Project Presentation Day results, MQP and IQP reviews, and course based assessment with few exceptions. Changes have been made as a result of using the data and evidence.

5. Faculty

Over the last decade, WPI has changed from a predominantly undergraduate institution to a research intensive institution with a growing number of graduate programs, especially at the doctoral level. Currently, there are 279 (76% male) full-time and 117 (73% male) part-time faculty. Of the full-time faculty, 230 (82%) are tenure-track.

Categories of faculty include: tenured and tenure-track, full-time non-tenure-track, and part-time. Non-tenure-track faculty hold appointments as either teaching or research faculty. Faculty categories are described in the faculty handbook. In 2000-01 faculty governance began a review of the roles, responsibilities, and accountability of full and part-time non-

tenure-track faculty. This review is presently unfinished although the faculty recently considered a proposal to redefine categories of faculty members that would establish guidelines for appointing, evaluating, promoting, and assigning titles to non-tenure-track faculty members. Since 2001, the number of faculty has increased in line with enrollment increases but with a proportionally larger increase in non-tenure-track faculty. The vast majority of faculty, both tenure-track and non-tenure-track, have terminal degrees. The integration of non-tenure-track faculty into the department and institution is unclear. While the non-tenure-track is a significant part of the faculty and are valued and appreciated by the institution, they are not voting members of the faculty, they may not serve on faculty governance committees, and they are not represented by those committees.

The student/faculty ratio is about 14/1 overall. The rapid increase in enrollment in both undergraduate and graduate programs, especially doctoral programs has created stresses on the faculty in terms of increased class size and heavy project and academic advising loads. In addition, WPI has increased its expectations of faculty research, especially in generating external funding. The self-study notes the project oriented curriculum for undergraduate students is labor intensive. The need for a new faculty workload model was discussed in 2001 but this work is uncompleted. It is uncertain if the scholarly productivity expectations of the tenure-track faculty in the Ph.D. programs can be achieved with current teaching loads, which are more typical of undergraduate faculty nationally.

Recruiting for tenure-track faculty is national and considers the institution's goal of increasing diversity. Increasing diversity remains a priority and a challenge. The ability to "stop the tenure clock" is an attractive option, especially for women. National publications have indicated WPI does well with women and minorities. The President's Council for the Support of Women and Minorities is working to ensure that all qualified individuals find a welcoming and supporting environment at WPI. Despite the institution's efforts, however, the representation of faculty of color is very low. Of the 288 full-time faculty, only 44 are minorities, and 40 of these are Asian, a category that is not considered underrepresented in technological institutions.

The institution requires all graduate teaching assistants to participate in a TA training seminar and complete a harassment prevention training course. International TAs are tested for English fluency and, if necessary, enroll in an ESL course. TA evaluations may follow a formal or informal process.

Mean salaries of full professors increased by 18% from FY2008 to FY2011, with mean salaries for associate and assistant professors increasing by 8.4% over the same period. Salary averages for tenure-track faculty are at least 60th percentile of benchmark. Mean salaries of non-tenure track faculty increased by 25% during the same period. Teaching workloads include classroom teaching, project advising, and academic advising. The recent increases in enrollments have increased some class sizes to well over 100 students. Teaching loads for tenure-track faculty include three or four courses per year plus advising student projects. New faculty members typically have a reduced teaching load. Non-tenure-track faculty members carry higher teaching loads than tenure-track faculty. Full-time non-tenure-track faculty workloads are usually the equivalent of eight courses per year, which may include project advising and administrative duties with fewer than eight courses. Teaching loads are assigned by department heads who may use their judgment in assigning loads. A

January 2006 faculty workload report identified the faculty workload distribution for teaching/scholarship/service as 60/26/14 set a future goal of 40/40/20. Progress toward this goal has not been assessed.

Faculty governance is described in the faculty handbook. Faculty governance appears to be particularly strong at WPI, with active participation across the tenure-track faculty. Numerous faculty committees deal with academic and faculty issues. Issues are decided at monthly faculty meetings at which all tenured and tenure-track faculty may vote. There is a climate of ownership and participation by faculty in faculty governance. A quorum is 25% of the voting members and this is met routinely. Changes to the constitution or bylaws of faculty meetings require a positive vote of two-thirds or more.

Evaluation and promotion and tenure criteria are described in the faculty handbook. Students evaluate all instructors at the completion of each course.

A faculty committee is charged with conducting hearings if issues concerning academic freedom are raised by tenured or tenure-track faculty. This committee then gives a report to the Provost. No hearings have been necessary for many years. Because the non-tenure-track faculty is not represented by faculty governance, it has no guaranteed institutional support for academic freedom.

Research start-up packages for faculty have increased and Gateway Park has significantly improved the infrastructure support for life science faculty. Deans are able to provide resources to assist faculty in preparing grant proposals. The Office of Sponsored Programs assists faculty in preparing and managing their grants. The increasing number of faculty and the increased research expectations are stressing the ability of this office to adequately serve the faculty. The extent of institutional support for faculty development is unclear. Success in obtaining external funding has improved but remains a priority. Since the last NEASC visit, WPI has established an Institutional Review Board. The IRB reviews both faculty and student proposals and has clearly established guidelines for the use of human subjects. As with other support areas on campus, the increasing numbers of students and faculty is stressing the IRB.

IQP students are invited to report on project advisor performance and progress towards learning outcomes. It is not clear how the collected data is used. A similar MQP student report is being developed. Tenured faculty members are required to have their teaching reviewed every six years, but these reviews are not consistently carried out. The effectiveness of academic advising is unclear. New students are assigned an advisor based on their residence hall floor with about 30 students per advisor. Later, students choose an advisor and the number of advisees for a faculty member could range from 0 to 60. Students are expected to take responsibility for choosing courses that satisfy degree requirements.

Faculty development funds are provided through department heads, who receive funds based on department enrollments. Funding varies each year and there are no stable, guaranteed source of funds. Conversations with faculty members indicate that they are presently receiving sufficient funding for professional travel and development, but increasing institutional demand for scholarly activity suggests that a more stable source will be needed in the future. Deans have some discretionary funds available for promoting scholarship.

WPI support for graduate students has been identified as an area of concern. Shortage of faculty office space and laboratory space is also an issue.

Institutional Effectiveness: WPI has a well-qualified and engaged faculty with a strong system of faculty governance. The effectiveness of faculty in fulfilling their responsibilities is periodically evaluated as described in the faculty handbook and the results of these evaluations are used to support the institution's mission. In response to the rapid growth in undergraduate and graduate enrollment, WPI has adjusted its faculty numbers and workload on a yearly basis. Although recent budgets have been able to provide funding for sufficient faculty and support as requested by department heads, the team expressed some concern about the need to assess both the number and type of faculty to ensure that faculty hiring is sufficient to maintain the quality of the academic program without unduly burdening the faculty. Various support services for faculty, including faculty development funds, support for external grants, and graduate assistants also need to be expanded to keep up with the growing numbers of faculty and increased institutional demands for faculty research and scholarship. In addition, WPI needs to continue to address the issue of the roles, responsibilities, and rights of non-tenure-track faculty.

6. *Students*

Admissions: The Enrollment Division coordinates highly successful and comprehensive marketing and recruitment activities collaborating with faculty and professional staff across the institution to effectively articulate the distinctiveness of the WPI Plan. The most recent strategic plan set a goal to increase the undergraduate population to between 3,200 and 3,400 students by 2015. That goal was realized in 2009 when total FTE undergraduate enrollment reached 3,320 and was surpassed in 2011 with a total of 3,463. The Data First forms indicate the size of the entering class has grown considerably from around 700 students ten years ago to 1,039 for the class entering in Fall 2011. The increase in enrollment has coincided with an increase in applications from nearly 3,100 in 2001 to over 7,000 for Fall 2011 with continued improvement in quality metrics. During this enrollment growth period WPI has decreased its acceptance rate from 66.1 percent to 59.1 percent and maintained a yield rate of 23 – 25% and a tuition discount rate of approximately 40%.

In the last comprehensive evaluation the Commission requested that future emphasis be given to the institution's success in achieving its goals for diversifying its faculty and student body. For WPI, those goals include attracting more women and other underrepresented students to broaden the institution's undergraduate diversity. According to data in WPI Fact Books, over the past ten years the representation of female undergraduates in the entering class has increased from nearly 23 percent in 2001 to over 30% currently. In Fall 2001, the undergraduate population at WPI consisted of 1% Black, 3% Hispanic, 7% Asian/Pacific Islander, and 5% International representation. White/Non-Hispanic students accounted for 82% of the student body. In Fall 2010, additional diversity within the undergraduate population was achieved as evidenced by 3% Black, 6.6% Hispanic, 6.4% Asian/Pacific Islander and 9.7% International representation. White/Non-Hispanic students accounted for 71% of the student body. In support of diversity recruitment efforts, WPI introduced an SAT/ACT optional application Flex Path process in 2008 and 4 percent of applicants for the 2011 entering class applied through this alternative process. Applications from domestic

diversity students have increased by 61% under Flex Path and enrollment of female diversity students has more than doubled. In addition, WPI has experienced an average yield rate of 50% for students accepted through this process in the past three years. The institution remains committed to several pipeline programs promoting interest in science and engineering for middle and high school students and maintains articulation agreements with three community colleges as a gateway for non-traditional access.

Retention and Graduation: WPI implemented a Task Force on Undergraduate Retention in 2007 to include faculty and staff from Academic Affairs, Enrollment Management, and Student Affairs. Retention efforts begin at New Student Orientation when each student is introduced to a 20-30 student Insight Team facilitated by a faculty/staff advisor and two trained student leaders. The Office of Academic Advising actively evaluates academic progress during and after each semester and notifies students, parents and advisors of concerns. The Office coordinates academic coaching delivered by professional staff and trained peers along with programs assisting students with study skills and time management.

Over the past three years WPI has maintained a first to second year undergraduate retention rate of 95% suggesting a supportive first year student experience in and out of the classroom. However, this high retention rate is not being sustained as evidenced by the overall four-year graduation rate of 70 percent and the six-year graduation rate of 80 percent. While WPI still exceeds graduation rates of peer institutions participating in the Consortium for Student Retention Data Exchange (CSRDE), staff and faculty across campus acknowledge room for improvement. Two new academic advising positions have been approved to provide strategic coaching to students academically at risk. The team concurs that a comprehensive focus on students at risk and the sophomore year experience may provide more significant and lasting retention and graduation improvements.

Student Services: Student Affairs complements curricular learning at WPI with an intentional and holistic student development approach designed to prepare students as global citizens, career professionals, and leaders. The division works collaboratively with competent and dedicated professional staff members across the institution to effectively deliver a full array of student services. For the past three years biweekly collaborative meetings between Academic Affairs, Academic Advising, and the Office of the Dean of Students have strengthened program quality and delivery during a time of major growth. In addition, a cross divisional Care Team was implemented in 2008 and regularly meets to discuss students of concern and coordinate referrals and crisis intervention services. In order to effectively meet the needs of a growing undergraduate population over the past ten years, WPI has increased staffing in several Student Affairs offices and realigned delivery of services and supervision based on institutional priorities and student needs.

Student Affairs offers all of the standard student development and opportunities necessary for a full student experience including student activities featuring over 200 clubs and organizations, 9 varsity sports each for women and men at the NCAA Division 3 level, 29 club sports, and 18 fraternities and sororities involving over 32 percent of the student population and guided by active Pan Hellenic, Interfraternity, and Alumni Greek Councils. WPI students are engaged in community service interdisciplinary projects coordinated through the Worcester Community Project Center to meet academic requirements. Voluntary

community service engagement has increased from 6,000 hours in 2005 to over 31,000 hours in 2010.

At the last comprehensive evaluation the Commission requested the Institution give emphasis to the institution's success in addressing the residential and co-curricular needs of graduate and international students. The team notes that the undergraduate and graduate calendars are now aligned and that undergraduate organizations are open to graduate student involvement. In addition, a Graduate Student Government has been formed and is advised by the Associate Dean of Students who works in partnership with leaders responsible for Graduate Admissions and Studies to support the graduate student population. The position of International Student Advisor was created in 2009 the International House provides ongoing transitional programs and advises students regarding federal immigration, tracking, visa and employment regulations.

The tremendous enrollment growth at WPI has resulted in significant housing challenges that have affected both undergraduate and graduate students and necessitated converting 200 double rooms to triples. During the site visit a physical review of those rooms was conducted. That review as well as conversations with students confirm that the room and common area space is ample and the custom furniture installed flexible. In addition, a review of internal and external survey results from 2008 – 2011 indicates that student satisfaction with residence halls and campus life has increased since the conversion. At the time of the site visit the team learned that planning is underway for an additional 250 bed upper-class residence hall as part of a residential plan supporting enrollment needs and retention efforts.

Institutional Effectiveness: Student Services at WPI are delivered cooperatively across divisions utilizing best practices and in full compliance with federal and state guidelines. Student assessment surveys generally reflect high satisfaction with co-curricular experiences and opportunities. WPI has utilized student feedback in designing continual improvements and additions to campus residence halls, recreational and dining facilities, programs and services. A full review of the impact of enrollment growth and adequacy of staffing across student services areas has yet to be conducted.

7. Library and Other Information Resources

WPI's Gordon Library has been proactive in responding to the changing needs of its users through intensive and thoughtful assessment processes. They clearly have responded to library 2.0 demands in higher education and are actively responding to the newer library 3.0 demands. The Library is innovative, passionate, interactive, and inspiring. The Library offers resources in multiple delivery modes, format types, and on several information sharing platforms. They react, plan, and strategize in response to user surveys and higher demands for savvy technologies that support learning, group projects, and the general educational demands of today's student. The library sets up their users for a successful and satisfying experience and creates an opportunity for the development of life-long learning competencies. Utilizing positive partnerships with the Office of Information Technology as well as internal library systems expertise, they have made available new technologies as well as user-centered technology support in the library. They offer state-of-the art discovery tools,

online resources, and instruction. Although much renovation and reorganization of space has taken place in the library, there is a continuing need and commitment to renovate spaces in response to the needs of users working in the library proper is still important.

The library is well-funded and supported by the Institution. The budget and planning has taken into account inflationary rates of electronic journals although book budgets have suffered greatly, something seen at many other academic institutions and, therefore, not surprising. Through collection development procedures, resource sharing, and discovery technologies, users have adequate access to needed resources for teaching, learning, and research. It is recommended that the budget be monitored very closely as it is anticipated as the high in-coming population influx may impact licensing and contract expenditures. It is recommended that librarians work more closely with faculty to write subject-specific collection grants to support programs, particularly those that can utilize one-time funds to grow an aging book collection. Information literacy instruction is at an all-time high at WPI, the library recorded a 91% increase in student participation between 2005 and 2011. There is an opportunity to reach out to all in-coming freshmen and it is suggested that consideration be given to the creation of a required, one-credit hour course that would added to the curriculum. The return on investment would be evident in the quality of research returned through projects, assignments in the classroom, and a higher competency level when leaving the institution.

The primary target audience has been the undergraduate population. As the University expands graduate programs, the library has acknowledged the need for outreach to graduate students. The current staffing level is of concern regarding the ability to respond to these new graduate programs and higher-level information literacy demands.

During this intense and ever-changing information age, professional librarians must continue to have opportunities for professional development. Ideally, a regular funding stream would be created for travel, conferences, and other professional opportunities. There are many travel grant opportunities and it is suggested that library personnel investigate these opportunities.

The current title and position of the head of the library is the Dean of the Library with a status as staff. The Dean designation is in title only and the position is not viewed as an academic peer and is disconnected from the academic structure. This should be evaluated in terms of leadership collaboration, partnerships, and academic engagement across the institution.

Institutional Effectiveness: Overall, the library is very active in creating a positive impact in the lives of the WPI community. They are responding proactively and reacting to data points when making decisions. The work they are doing is commendable, diligent, and of a high caliber. The library is very well regarded on campus and rightfully so. They are effective and have a positive impact on institutional initiatives.

8. Physical and Technological Resources

The Institution is an older, urban campus which has made a significant investment towards enhancing and expanding its facilities and technological resources. The main campus is

comprised of 80 acres of land with 38 major buildings and approximately 36 other properties covering approximately 1.6m square feet. In addition, the Institution owns an additional 12 acres of land off the main campus, designated as Gateway Park, which is the centerpiece for future development for multiple purposes. The Institution also leases additional space in this Park to satisfy its space needs.

The Institution's commitment towards further developing these resources is clearly evident as a pillar within the Strategic Plan; however it was noted that the Campus Master Plan has not been updated since 2004. It will be important to readdress this Master Plan to coincide with the Strategic Plan and future financial plan in the near future. The Major Capital Plan adopted in 2008 (revised May, 2011 and still evolving) outlined approximately \$140m of capital projects to be funded with a combination of debt, capital campaign giving and operating reserves; \$79m of which is anticipated to be completed by June, 2012. Since the last team visit, the expansion and renovation of the campus has been extraordinary. New buildings totaling 326,000 square feet at a cost of \$97m, including the Gateway Life Sciences and Bioengineering Center (\$39m), Gateway Garage (\$9m), a new 232-bed Residence Hall and parking garage (\$42m), and the Bartlett Center (\$7m). Recent renovations have included the reuse of Salisbury Laboratories, the Gordon Library, and Alumni Field.

New projects currently underway and/or planned for the future include the construction of a new parking garage with two sport fields on top (\$20m), a new Sports and Recreation Center (\$53m) due to be completed in May, 2012, renovation to Alumni Gymnasium and Morgan Dining Hall and a new (co-developed) 2nd building at Gateway Park. In addition, WPI is in the planning and design phase for the new residence hall for the construction of a new 250-300 bed residential facility for both undergraduate and graduate students. The expansion of Gateway Park in the future will be a key strategic initiative with significant strategic implications.

The Institution also appears to have an active strategy in assessing deferred maintenance needs. Approximately \$64m has been inventoried as needs (\$37m high priority) which are planned to be funded through future operating reserves and annual depreciation expense. Note that \$20m of recent deferred maintenance was funded through bond financing in 2003. The Institution's Facility Condition Index (FCI), a common benchmark in assessing building conditions, and defined as the total cost of repairs divided by the total facility replacement cost, indicate that WPI is currently at .12. According to industry standards a "good" building has an FCI of less than .05, a "fair building between .05 and .10 and a "poor" building at greater than .10. It will be important for the Institution to proactively manage the repair backlog in balance with other strategic priorities.

A significant commitment to sustainability has also been achieved over recent years, as the Bartlett Center has become the Institution's first LEED certified building and the new East Hall residence hall received LEED Gold certification. This is an impressive initiative that should be commended.

The connection between the Strategic Plan and facility investments is ongoing. It appears that the pace of construction and renovation activities is very rapid and it has outpaced current staffing levels in the Facilities Department. The Institution currently delegates project management to various physical plant employees and outsourced professionals. Space

planning and utilization for continued growth in enrollment is a primary objective of the administration. Management intends to perform a more current comprehensive study in this area to coincide with the enrollment and staff growth. Outside of Capital Project management, the facilities organization appears to be adequately staffed with all appropriate functions covered, including environmental, health and safety, a prerequisite for an effective engineering core curriculum.

The Institution has also made a significant investment in technology strategies, including the formation of an IT Governance Team, the investment into a new campus backbone with Juniper Networks and the active utilization of the campus Banner enterprise reporting system. The leadership team appears to be current with assessing campus needs in this area and appears to stay current with emerging trends involving reporting, data security, storage capacity, web-enabled applications, documented policies, network design and monitoring, and 3rd party management. Network security measures are also underway to enable payment card industry (PCI) requirements. Appropriate service requirements appear to be adequately covered to serve the community with a research support team, an equipment replacement strategy and a classroom capital assessment process. The depreciation of technology capital assets appears to be outpacing annual capital funding, but this will require greater analysis by the Institution. The Institution is also in the process of implementing the Banner Fixed Asset module to more effectively monitor its fixed assets, including technology. Future Banner initiatives may also include a document management and workflow module implementation to enable a potential paperless business infrastructure.

Institutional Effectiveness: Physical and technological resources appropriately support the educational mission and are designed and maintained to effectively serve institutional needs. Appropriate planning is evident in these areas and a continued commitment towards updating the Master Plan and assessing space needs with related cost implications in order to curb deferred maintenance will be important. The Institution appears to be in a rapid growth stage at this time and diligence in correlating academic strategic planning with campus master planning will be essential.

9. Financial Resources

The Institution's financial results over the past three years have been strong with solid operating surpluses attained through strong enrollment growth, increased other educational revenues, increased research funding providing budget relief, and an effective financial planning and budgeting process. Most recent financial results for the year ended June 30, 2011 showed an operating surplus of \$12m or an approximate 6.9% operating margin.

Undergraduate enrollment growth over the past few years has been very strong with an increase in applications, selectivity, and yield. The growth in graduate enrollment has been even stronger. The Institution also has a significant executive and professional educational program which doubled its revenues over the past four years. Increases in other revenues, including research funding and auxiliary revenues have occurred. Sponsored research and other federal funding and related expenditures totaled \$19m for the year ended June, 2011. The Institution's bond rating (an independent measure of financial strength) is A1 from Moody's Investment Services and A+ from Standard and Poor's.

The Institution has a strong base of expendable financial resources to both debt and operations compared with rating agency equitable rating category medians. The Institution has an endowment to debt ratio of over 1.8:1, with an endowment value of over \$383m at June 30, 2011 and total outstanding debt of \$203m. The financial resources are effectively managed with a strong experienced management team, effective staff coverage and a solid financial planning and budgeting process. The Institution's financial statements are independently audited each year with a consistent unqualified opinion each year. The auditors (PWC) noted that they are unaware of any material uncertainties that may impact the institution adversely in the future and noted no material weaknesses in internal controls which would impact federal funding.

The financial strategy of the Institution is frequently being updated to correlate with the strategic plan concepts as outlined. Diligent efforts are made in the budgeting process to direct funds to areas of academic and residential needs. The annual operating and facility and technology capital budget processes are well managed with a top down, bottom up procedures. It was noted that the annual operating budget is mapped to the audited year-end financial results, but significant variances existed when comparing the two. For FY11 \$34m of excess revenues were earned above budget and \$22m of excess expenses were incurred above budget, largely as a result of not budgeting full research activities and a strong performance of operations. It is good practice that the Board approved annual budget in the future be more in line with planned and projected final year-end audit results. The Institution does not budget using Generally Accepted Accounting Principles (GAAP). This has not recently been a problem as there is transparency on mapping the budget to the final results; however this could present issues if not carefully managed and understood by all constituents. Cost accounting for individual graduate programs did not appear transparent. Direct cost allocation models to more clearly delineate allocated financial resources to these programs may be helpful. The value of this exercise may help assess strategic reinvestment priorities.

The Board of Trustees governing structure appropriately includes separate finance, investment, audit, fundraising and capital sub committees that meet periodically to review the related operational strategies and issues.

Tuition increases over the past few years have been in line with competitor pricing analysis and inflation trends. The financial planning infrastructure is based upon a five year planning model with all applicable assumptions taken into account, including enrollment, pricing, auxiliary margins, residential housing and dining, financial aid, faculty and staff deployment, capital expenditures, debt and partial depreciation. Financial aid discounting strategy has been an important focus and strategy to coincide with the recent academic programming enhancements and with enrollment growth trends. The success experienced in enrollment has had a direct relationship with the financial aid discount rate now at 40% overall for the year ended June, 2011. The budgeted discount rate for FY12 is approximately 41% for undergraduate tuition and 17% for masters and doctoral graduate programs. The overall discount rate for the most recent freshman class was approximately 42%.

Financial challenges that the Institution is now faced with include underfunding of depreciation available for deferred maintenance (to reduce the facilities condition index), the

assessment and understanding of the true cost of instructional programs and other related resource requirements, and the development of a formal space needs and utilization study.

The Capital Campaign has a very impressive goal to raise \$200m for the period of 2008-2015. \$125m of the Campaign is endowment related for academic and financial aid purposes, and \$75m is for annual giving and facilities purposes. To date, the Institution has been successful in raising approximately \$111m with a \$120m goal by June, 2012. Approximately one third of funds raised have been received in cash. For the year ended June, 2011, annual fund operating contributions were impressive at \$4.4m, with another \$14.2m raised for non-operating purposes. The endowment of the Institution is supported by sound governance and oversight. The Institution utilizes the capabilities of a premier consultant to help perform due diligence, report on returns and current market conditions, and make recommendations on investment strategies and asset allocations. The endowment returns over the past few years are within peer and industry benchmarks and liquidity of the endowment appears somewhat tight with 46% classified as Level 3. The Institution's endowment spending rate is currently 5.4%, however plans are now implemented to reduce this rate to 5% over the next few years.

The staff of the financial operation is well positioned to cover the appropriate areas of oversight. They are qualified and experienced and have kept up with emerging financial trends including appropriate financial disclosures, industry best practices, internal controls, etc. As federal research funding has increased over the years, it will be increasingly important to ensure proper staffing to ensure that federal OMB A-133 (and related A-21 cost) compliance regulations are followed. These areas are also reviewed by the Institution's auditors (PWC) each year with minimal management letter comments.

Institutional Effectiveness: The Institution has adequate financial resources to sustain the achievement of its educational near term objectives. The Institution has a good diversified revenue base with tuition and auxiliary operations representing 64% of its total revenues. The Institution's conservative budgeting practices, successful Capital Campaign, strong enrollment trends, and endowment returns have significantly contributed to the increase in Net Assets over the past few years. The senior management team's understanding of the strategic and financial infrastructure is impressive. The need to incorporate future expansion and renovation needs into the overall financial plan, and to correlate them with the evolving academic planning model and strategic planning objectives is essential.

10. Public Disclosure

The Institution publishes all of the traditional publications including undergraduate and graduate catalogs, the Student Planner and Resource Guide including the student code of conduct and policies, three issues of the alumni magazine, Transformations; WPI Research, an annual report on research initiatives; WPI Connection, a daily online newsletter; and an annual President's Report. Generally, these publications present a timely, complete and accurate reflection of WPI, its programs, policies and procedures, and are distributed widely to appropriate audiences. In addition, all of these publications are professionally produced and reflect a consistent image. The Institution maintains an attractive website containing archive material that is easy to navigate and electronic versions of all major publications are

available along with a user-friendly directory of all employees.

WPI used the self-study process to determine the extent to which it made publicly available the information in the Public Disclosure Standard and summarized those results effectively in the Public Disclosure Data form. All of the identified information in the Standard is available through the website and selectively through printed publications. The Institution maintains a useful intranet including Blackboard that is utilized by faculty, staff and students. WPI published notice of its comprehensive evaluation inviting public comment during the three month period preceding the visit on its website, through WPI Connection, in its alumni electronic newsletter, to local media, and to the student newspaper.

Institutional Effectiveness: The Institution used the self-study process to conduct a review of all electronic and print publications, call for submissions, editing, and procedures. The current review of marketing communications and branding guidelines, policies and procedures will be useful to insure future consistency and organization under the coordination of Marketing and Communications.

11. Integrity

WPI subscribes to and advocates high ethical standards in the management of its affairs and in its dealings with its constituents. Its mission statement emphasizes professional practice, civic contribution, and leadership, along with the responsibility to convey knowledge for “the betterment of society.” WPI’s commitment to honesty, integrity, fairness, and inclusiveness are evident in its policies and institutional structures.

WPI’s commitment to academic freedom in both teaching and research is clearly articulated in the Faculty Handbook. The Faculty Handbook also establishes the Faculty Review Committee as the appropriate body through which faculty members can grieve personnel decisions, including tenure, and identifies the process through which a faculty member can initiate a grievance. At present, however, only tenured and tenure-track faculty are protected by the Handbook. Although we believe that the administration would most likely uphold the institution’s commitment to academic freedom for all faculty members, the lack of protection for non-tenure-track faculty needs to be addressed.

Institutional policies related to integrity are easily found on the website. The list of policies includes codes of conduct for all members of the community, anti-harassment and anti-discrimination policies for employees and students, an intellectual property policy, conflict of interest policy, FERPA and other privacy policies, and policy statements on academic honesty and copyright compliance. Grievance policies related to grades are clearly articulated in both the undergraduate and graduate catalogs. Although the policies are easily available, however, it is not clear whether they are fully understood. For example, the self-study report states that only 7 percent of students who responded to the MISO survey on the Gordon Library felt that they knew where to get answers to questions about copyright and fair use. An evaluation of the Great Problems Seminars suggested that first year students in the Great Problems Seminars (GPS) were more likely to receive instruction about using information ethically than non-GPS students. Further, although the undergraduate catalogue and website include information about academic honesty and copyright compliance, the graduate

catalogue and website do not. The Library is addressing these issues through weekly workshops for students on copyright and fair use.

WPI has a campus ombudsman, whose office provides an impartial, safe, and confidential place for faculty, students, and staff to deal with their concerns. The ombudsman does not take precedence over existing procedures for adjudicating grievances but rather allows the parties to talk with an impartial person and to be advised of their rights. To ensure that faculty, students, and staff have a confidential means of reporting potential violations of its business ethics policy, WPI uses Ethics Point, an online site that allows individuals to report their concerns anonymously. The website is posted on the Human Resources and Ombudsman sites. Members of the campus community appear to know about the site.

Non-discriminatory policies are clearly stated online and in WPI's publications. Faculty search committees meet with the Director or Associate Director of Human Resources at the start of all searches to review search procedures and discuss WPI's diversity goals, and there is a new Faculty Search Guidelines handbook. WPI has not been particularly successful, however, in recruiting faculty of color, which may be a pipeline issue or may indicate problems with the campus climate. The President's Council for the Support of Women and Minorities has not undertaken an assessment of the campus climate for faculty of color.

WPI established an Institutional Review Board in response to concerns raised in the 2001 NEASC report about the lack of infrastructure support for faculty engaged in research. The IRB is functioning well but its workload is growing.

The increased emphasis on faculty research and securing external funds suggests that WPI needs to maintain sufficient staff in Sponsored Research to ensure compliance with research regulations.

Institutional Effectiveness: WPI appears committed to the pursuit of institutional integrity. High ethical standards are modeled by senior officers and policies and procedures related to integrity are in place. The self-study indicates that the administration and faculty are presently working to update and clarify the policies on research misconduct, sexual harassment, and faculty misconduct, and to provide a system of sanctions for each. The college also needs to ensure protection of academic freedom for non-tenure-track faculty and to continue to work to increase the number of students, staff, and faculty of color.

Institutional Effectiveness Summary

WPI provided institutional effectiveness assessments at the end of each standard review within the Self-Study. WPI has a long tradition of assessing student learning and this is apparent for both the student and academic standards. This tradition provides a sound basis and context for institutional effectiveness for these standards. It should be noted that while institutional effectiveness is very good it is not completely uniform. Furthermore, although there is strong evidence from both the self-study and the team visit that continuous improvement is a well understood and active process at WPI, it was not necessarily as well explained in the Self-Study as it was in the many face-to-face meetings held on campus. The continuous feedback loop and the desire of WPI to self-improve are particularly apparent and taken seriously by the faculty, library personnel, information technology personnel and in

general within the governance structure of WPI. Given the extent of the seriousness with which institutional effectiveness is actually imbedded within WPI a firm review of institutional effectiveness sections in the self-study material would have been useful and provided better documentation of institutional effectiveness.

Affirmation of Compliance

To document the institution's compliance with Federal regulations relating to Title IV, the team reviewed WPI's Affirmation of Compliance form signed by the CEO. WPI publicly discloses on its website and in their undergraduate and graduate catalog its policy on transfer credit. Public notification of the evaluation visit and of the opportunity for public comment was made by the Institution two months prior to the visit in the Worcester Telegram and Gazette, WPI student newspaper and on the Institution's website. Copies of the WPI's student policies pertaining to grievance procedures, student rights and responsibilities can be found on their website and relevant printed publications. All distance education academic work is done through the institution's learning management system, myWPI with the appropriate security measures in place. At the time of the visit WPI was reviewing options that could be used to verify compliance. The team found, that institutional policies and procedures for determining the credit hours awarded are in compliance and published in the undergraduate catalog. Further, the team's discussion of WPI's credit hour policy can be found in the Integrity of the Award of Academic Credit in Standard 4: The Academic Program.

Summary

In general, it is the view of the Evaluation Team that WPI is achieving its mission and offering academic programs and services consistent with its stated mission. It is accomplishing this task under the leadership of an involved and committed Board of Trustees, a highly able and respected President, and a well-qualified faculty and staff committed to serving the needs of WPI students.

As a result of Dr. Berkey and the collective leadership, the Institution has engineered a remarkable turnaround as WPI moved away from a position in the mid 1990s when its continuation and survival were in question. As a result of presidential, board, and in particular, support by a dedicated and student-oriented faculty, a plan of action for survival and renewal was developed and implemented, senior administrative officer were recruited, and the entire community was motivated and energized to turn WPI around. Among the major accomplishments during the past decade are: the entering class has grown considerably from around 700 student to 950; the institutional strategic planning appears to serve the institution well and is relied upon in decision making and subsequent planning. Decisions to commit resources strategically are tied directly to the strategic plan and to each department's mission and goals. A significant (51%) increase in graduate enrollment, off-site certificate programs as well as master degrees for the continuous education of the industrial workforce has resulted in a steady increase in revenue. There is a tremendous climate of ownership and participation in governance with the faculty. Research start-up packages for faculty have increased and Gateway Park has significantly improved the infrastructure support for the life science faculty. Most recent financial results show a very healthy operating surplus.

All the above mentioned were accomplished in a collegial atmosphere, with all elements of the Institution's community in dialogue with one another. These are no small accomplishments for any Institution, at any time, but are all the more remarkable given that WPI achieved these accomplishments during a time when many private colleges were losing ground or happy to be maintaining their position with respect to enrollment and finances. We encourage the Institution to take the time needed to equilibrate the institution to its new found growth.

However, notwithstanding all WPI's accomplishments, WPI is well aware of the fact that the years ahead will be uncertain at best and the pressures on higher education will continue. With this in mind the team offers the following summary of the most important strengths and concerns.

Strengths

- Clear mission statement and the WPI plan that underscore the distinctiveness of the institution.
- Significant recent growth in undergraduate, graduate and corporate enrollment leading to strong operating margins.
- Innovative project-based curriculum that includes the three capstone projects and Great Problem Seminars, unique overseas opportunities and the non-traditional seven week terms.
- Development of exceptional corporate connections that began with projects and MS programs and are now utilized to include all WPI corporate touch points including graduate employment, internships, and corporate philanthropy.
- Collegial, collaborative campus culture where faculty, students and staff are engaged with and passionate about the institution.
- Faculty involvement in governance.
- Effective presidential leadership that instills confidence in the campus community.

Concerns

- While there is a strong commitment and modest improvement since the last accreditation visit, there remains a noticeable lack of diversity with respect to students, staff and faculty of color.
- There appears to be a lack of coordinated assessment of staffing levels and facilities to support recent enrollment growth.
- There does not appear to be an accurate determination of student time on task to maintain the integrity in the award of academic credit as defined by NEASC.
- Assessment of capstone projects and the Great Problem Seminars is not consistent and mapped to project and institutional learning outcomes.
- The role of the academic deans is not clearly defined.
- A need appears to exist for more detailed strategic planning especially with regard to graduate education.
- A comprehensive financial resource allocation plan and appropriate funding for deferred maintenance was not evident.