

Report to the
Faculty, Administration, Trustees, Students

of

Worcester Polytechnic Institute

by

An Evaluation Team Representing the
New England Commission of Higher Education

Prepared after study of the institution's
self-evaluation report and site visit
October 4-7, 2021

The members of the team:

Chairperson: Dr. David C. Munson Jr., President, Rochester Institute of Technology, Rochester, NY

Dr. Alexis Abramson, Dean of Thayer School of Engineering, Dartmouth College, Hanover, NH

Dr. Natalia F. Blank, Vice President for Academic Affairs and Assessment, D'Youville College, Buffalo, NY

Dr. Marin Clarkberg, Director of Institutional Research & Planning, Cornell University, Ithaca, NY

Dr. Kim Godsoe, Senior Associate Provost for Academic Affairs, Brandeis University, Waltham, MA

Dr. Coleen C. Pantalone, Associate Professor Emeritus, Northeastern University, Boston, MA

Ms. Christie L. Taylor, Secretary to the Board, Howard University, Washington, D. C.

Mr. James Walsh, Executive Director and University Controller, Tufts University, Medford, MA

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.

**New England Commission of Higher Education
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: 10/1/21

Name of Institution: Worcester Polytechnic Institute

1. History: Year chartered or authorized 1865 Year first degrees awarded 1871

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

3. Degree level:
 Associate Baccalaureate Masters Professional Doctorate

4. Enrollment in Degree Programs: (Use figures from fall semester of most recent year): *enrollment & retention data as of 10/1/21 (not final)

	Full-time	Part-time	FTE	Retention ^a	Graduation ^b	# Degrees ^c
Associate	-	-	-	-	-	-
Baccalaureate	4956	183	5028	94%	87%	1016
Graduate	778	1157	1220	89%	93%	804

(a) full-time 1st to 2nd year (b) 3 or 6 year graduation rate (c) number of degrees awarded most recent year

(a)&(b) Graduate - FT master's only *as of 10/1/21 (not final)

5. Student debt:

	Most Recent Year	One Year Prior	Two Years Prior
Three-year Cohort Default Rate	1.1%	0.7%	1.1%
Three-year Loan Repayment Rate	98.9%	99.3%	98.9%

	Associate	Baccalaureate	Graduate
Average % of graduates leaving with debt	-	59.6%	10.1%
Average amount of debt for graduates	-	\$48,056	\$34,355

Total Student Debt figures for 2021 graduation year

6. Number of current faculty: Full-time 420 Part-time 63 FTE 441 *as of 10/1/21

7. Current fund data for most recently completed fiscal year: (Specify year: FY21) *unaudited
 (Double click in any cell to enter spreadsheet. Enter dollars in millions, e.g., \$1,456,200 = \$1.456)

Revenues		Expenditures	
Tuition	\$189.271	Instruction	\$118.962
Govt Appropriations	\$0	Research	\$38.992
Gifts/Grants/Endowment	\$81.198	General	\$103.021
Auxiliary Enterprises	\$27.875	Auxiliary Enterprises	\$34.766
Other	\$6.653	Other	\$0
Total	\$304.997	Total	\$295.741

8. Number of off-campus locations:
 In-state _____ Other U.S. _____ International _____ Total 0

9. Number of degrees and certificates offered electronically:
 Programs offered entirely on-line 35 Programs offered 50-99% on-line 4

10. Is instruction offered through a contractual relationship?
 No Yes Specify program(s): BAE Employee Leadership Development Program (6-9 credits toward MS or MEng)

Introduction

This report to the New England Commission of Higher Education provides a comprehensive evaluation of Worcester Polytechnic Institute (WPI), following its last such evaluation in 2012 and an interim report submitted in 2016 and accepted in 2017. The Evaluation Team extends its sincere appreciation for the exceptional planning and attention to detail provided by the WPI leadership and overall community, both before and during our campus visit, which occurred October 4-7, 2021. WPI welcomed us warmly, expeditiously satisfied every request, and provided outstanding support that enabled us to efficiently and thoroughly undertake this review. We thank literally hundreds of well-prepared faculty, staff, students, and Trustees who engaged with us, educated us, and were forthcoming in answering our many questions.

The review team met with President Leshin, members of the Board of Trustees, Provost Soboyejo, academic department heads and program leaders, faculty governance chairs, faculty in an open meeting, members of Student Government and Graduate Student Government, undergraduate students in an open meeting, both on-campus and online graduate students in open meetings, staff in an open meeting, Student Affairs leadership, Office of Accessibility Services, Office of Academic Advising, Career Development Center, Student Development and Counseling Center & Health Services, Office of Multicultural Affairs, Enrollment Management, the Global School, leadership of the Strategic Plan, Graduate Studies, Outcomes Assessment and Institutional Research, Talent & Inclusion and Title IX, Facilities & Space Planning & Sustainability, Graduate Studies and Corporate Engagement, Sustainable Excellence, Finance, Outreach Programs, Research Support, General Counsel, Marketing and Communications, Advancement and Alumni Relations, Information Technology, and Coronavirus Emergency Response Team. In addition, evaluation team members interacted informally with students throughout the visit as they shepherded us from one meeting to the next. We also toured the campus and two team members visited the research facilities at Gateway Park.

The evaluation team found that the self-study report and other provided materials offered a high level of detail and accurately depicted the state of WPI. The team especially appreciated the thorough preparation of the self-study, which enabled the team to learn a great deal about the institution prior to arrival on site. After arrival, additional materials were promptly provided to the team upon request. A careful review of all materials, plus three full days of interaction with the campus community provided the basis for the information and evaluative judgments contained in the following sections of this report, which address the nine *Standards for Accreditation* of the New England Commission of Higher Education.

Standard One: Mission and Purposes

At the time of the team visit, WPI was completing its work on a new mission statement and set of core values. The new mission statement from the self-study reads, “WPI transforms lives, turns knowledge into action to confront global challenges, and revolutionizes STEM through

distinctive and inclusive education, projects, and research.” The self-study further elaborated on the three pillars in this concise mission statement and also noted that the mission statement is informed by WPI’s values: Respect, Community, Inclusion, Innovation, and Achievement. A new WPI strategic plan had been nearly completed at the time of the visit and is driven by the mission and values. The themes within the plan are Student Access, Purpose-driven Education and Research, and Who We Are and How We Work.

It was abundantly clear to the visiting team that WPI already is living up to its new mission and set of values. Evidence includes recognition of diversity and inclusion efforts via a 2020 Higher Education Excellence in Diversity (HEED) Award, expansion of global project centers and removal of financial barriers for students undertaking global experiences, growth of WPI’s research portfolio, and receipt from the National Academy of Engineering of the 2016 Bernard Gordon Prize for Innovation in Engineering and Technology Education. This latter award is particularly impressive and was conferred for “a project-based engineering curriculum developing leadership, innovative problem solving, interdisciplinary collaboration, and global competencies.”

Standard Two: Planning and Evaluation

Based on the institutional self-study and confirmed through meetings with the campus community and a review of the exhibits provided by WPI, the accreditation team finds that WPI engages in systematic and comprehensive planning and evaluation activities.

Planning: As mentioned above, at the time of the team visit, WPI was in process of finalizing a new strategic plan. The former strategic plan, *Elevate Impact*, had been conceived to be implemented for 2015-2018. The timeline was initially extended for an additional year before the COVID-19 pandemic again altered timelines. *Elevate Impact* identified nine specific initiatives for 2015-2018. The institution has appropriately prioritized these nine initiatives, and developed and monitored metrics to track their progress.

In discussions with faculty and staff at WPI, the team heard that the planning process for the next strategic plan has included broad representation and a series of conversations over an extended period. The President has communicated with the campus through regular townhalls about the plan’s development and emerging themes. Similarly, the President has communicated extensively with the Board of Trustees as the plan has developed. In our meetings with the campus community, the team found a broad understanding of—and support for— both the former strategic plan and the on-going planning for the next strategic plan.

WPI also engages in other types of strategic planning, outside of the formal university-wide strategic plan. For example, two white papers prepared for the Board of Trustees in 2018 articulated a plan to increase undergraduate enrollment by ~40 students per year with an intention to reach 5000 by 2022. The rationale for growth was tied to financial resilience. Actual

growth has occurred at about twice that pace, and the target of 5000 was achieved ahead of schedule. The team noted that the undergraduate population at WPI has grown more than 35% since 2010, increasing from 3537 in 2010 to 4804 in 2020 (according to the online Data Dashboards maintained by Institutional Research) and reportedly topping 5000 at the time of our 2021 visit.

Across several meetings, the team heard about negative impacts of rapid growth of the undergraduate population. Importantly, students told us that they strongly value the close ties to one another made possible at a smaller institution. Indeed, the team found that the remarkable sense of community is an essential component of what makes WPI so special and believes that this strength should be carefully stewarded.

Given the magnitude of campus-wide impacts of enrollment growth, broader campus conversation relating to this type of strategic move is important. A planful “right-sizing” of WPI should be accomplished via an inclusive planning process that reflects a broad array of considerations in addition to budgetary needs that can be met by what the enrollment management team can deliver.

Evaluation: WPI has made recent investments to strengthen the use of data and analysis to support decision making and assessment. The Office of Institutional Research was created in 2016 to consolidate analytic and reporting functions that previously had been distributed across various offices. In 2021, the office was placed within the Office of Strategic Initiatives with an intention of making more direct connections between data analysis and the strategic direction of the university.

The institutional research unit has made important gains, such as moving the Student Fact Book from PDFs to Tableau dashboards in 2018. However other metrics, such as headcounts of employees and composite metrics (like staffing ratios), have yet to be developed and/or represented on the institutional research website.

For the last four years, WPI has made a tremendous investment of human and fiscal resources into the Workday enterprise management system. This build-out of Workday and its considerable reporting capacities have absorbed a great deal of time and attention. As a part of the Workday development and the transformation of enterprise reporting systems, some data used to assess aspects of student learning (through eProjects) were unavailable for three years. This has been a setback to the assessment of student learning outcomes across the institution.

The COVID pandemic forced WPI to make significant advancements in data integration, particularly with respect to student data. The executive-level COVID dashboards are among the most sophisticated available at WPI, and greatly enhanced the capacity for strategic decision-making around the pandemic. This has been an important demonstration of what is possible.

WPI can make additional gains in using data to support academic planning and evaluation. It will be important for WPI to prioritize the development of data used for the assessment of student learning outcomes and data assets to support long-term strategic decision-making.

Standard Three: Organization and Governance

WPI has established an organizational structure that is consistent with its mission and that contributes to its effectiveness as an institution dedicated to higher education and research. Its governance structure provides pathways for a range of stakeholders to participate in creating and implementing policies. Elements of the governance structure include the Board of Trustees, a faculty governance system, undergraduate and graduate student government organizations, an alumni association, and the Administrative Policy Group.

Board of Trustees: The WPI Board of Trustees (also referred to as The Corporation) serves as the top-level governing body of the institute and holds fiduciary responsibilities. The Bylaws set forth in appropriate detail the structure, roles, and responsibilities of the Board; the process for election of trustees; and the cadence of meetings. Trustees reported that a substantial amount of work has been invested in the Bylaws over the last 10 years. The most recent revision, dated May 2021, is publicly available on the University's website.

The Board currently has 30 voting members, not including the President. Consistent with principles of good governance, each trustee signs a Trustee Roles and Responsibilities form and agrees to abide by the university's Conflict of Interest Policy. The Board seeks to conduct board self-assessments annually and committee assessments biannually, although the Covid-19 pandemic interrupted that cadence in 2020.

The Board holds regular meetings three times a year and convenes special meetings as necessary. It has an Executive Committee and 10 additional standing committees to facilitate its oversight role. The Secretary of the Faculty and the chair of the Faculty Committee on Governance are invited to attend regular Board meetings, and faculty are appointed to serve as full voting members on most committees. The elected presidents of the Student Government Association and the Graduate Student Government also are invited to attend regular Board meetings as well as open meetings of Board committees.

The Board seeks to fill its ranks with members who possess a range of personal and professional skills and expertise that will contribute to effective oversight. At this time, overall membership is well rounded. We were told that the Board will have significant turnover in its membership in the next three years, so we encourage the Board to remain vigilant that important gaps in expertise do not emerge and that diversity be an important consideration.

Currently, about three quarters of the Board are alumni of WPI. The board has made efforts in recent years to increase the diversity of its members in terms of gender, age, and ethnicity. About

one third of the trustees are women. Eleven trustees are under age 60, thirteen are between the ages of 60 and 70, and six are over age 70. There is one underrepresented minority among the membership, a number that needs to increase. The Board has formed a Diversity, Equity, and Inclusion (DEI) Task Force, charged with promoting an environment at WPI that is fully inclusive, equitable and respectful of diverse perspectives. We note that to move the needle, DEI initiatives require significant effort sustained over time. We encourage and support the Board in its aspirations in this area as related to the Board as well as the broader WPI community.

Institute Leadership: The President is the chief executive officer of WPI. The Provost, the chief academic officer, reports to the President. Each of WPI's four schools is led by a dean, who reports to the Provost. In January 2017, WPI hired its first general counsel, an important addition to the leadership team in a time of increasing complexity and risk in the higher education sphere. The roster of senior leadership is publicly available on the WPI website.

Faculty Governance: Faculty governance at WPI is carried out under the provisions set forth in the Faculty Constitution and Bylaws, in adherence to policies and procedures described in the Faculty Handbook, and through an appropriate committee structure. Faculty have principal purview over academic policies at WPI. Meetings are convened monthly and presided over by the Secretary of the Faculty. The schedule of Faculty meetings, and committee meetings, along with meeting materials are publicly available on the university's website.

The faculty at WPI were lauded by the administration, students, and staff whom we met with formally and informally. WPI faculty seem to be very engaged and committed to their students, their colleagues, and the institute. We perceived ongoing antipathy held by some faculty members toward the university's senior leadership and the Board of Trustees. We encourage ongoing efforts to create improved understanding and trust, and fuller cooperation.

We also met with members of a nascent entity that has been formed to promote the interests of teaching or research track (TRT) faculty. This TRT Council is not yet a formally recognized governance group. At present, it seems to be serving a specific purpose in representing this newly-created class of faculty and may warrant continued existence.

Student Government Organizations: The Student Government Association (SGA), elected by the undergraduate student body, serves as a conduit for student input into institute policies relating to academic and student life. The SGA holds annual elections and is organized in a manner appropriate for its purpose. Likewise, the Graduate Student Government (GSG) describes itself as the governing body of WPI graduate students and seeks to promote graduate life and to provide a mechanism for dialogue between the graduate student population and the administration and faculty. The leaders of both the SGA and the GSG are invited to regular meetings of the Board of Trustees.

Alumni Association: The WPI Alumni Association exists to serve as an advocate for the alumni community and to foster cohesiveness among the institute’s alumni. The Alumni Association has an elected board and is governed by its own mission and bylaws.

Administrative Policy Group: Administrative policy is set by the WPI administration with the support of the Board. In March 2020, the Administrative Policy Group (APG) was formed to develop, approve, and publish administrative policies for the Institute. We noted that the establishment of the APG has met some resistance within some segments of the faculty. We found the administrative policy-setting process, managed by the APG, to be transparent, rigorous, and inclusive of key stakeholder groups at the institute. We understand that the administration is seeking to communicate the role and the value that APG brings, and we support them in this effort.

Staff: The open meeting held with staff was very well attended, and we found the participants thoughtful and strongly committed to WPI. We noted that, although staff are integral to the success of the institute, no independent governance organization exists to represent this segment of the WPI community. We understand that creation of an entity to channel the voices and interests of staff is under discussion at the senior administrative level.

Standard Four: The Academic Program

Introduction: The WPI faculty is organized into 17 academic departments, each led by a Department Head, collected into four schools, each led by a Dean: Arts & Sciences, Engineering, Business, and The Global School. Three of the schools (all except Business) and three academic departments (Aerospace Engineering, Robotics Engineering, and the Department of Integrative and Global Studies) were created in the last two years.

At the undergraduate (UG) level, WPI offers 34 bachelor’s degree programs in engineering, physical and life sciences, computer science, mathematical sciences, business, the humanities and arts, and social sciences. Thirty-one programs lead to a BS and three to a BA.

At the graduate level, WPI offers 77 different graduate program options, including 50 master’s degree programs and 27 doctoral programs. Additionally, WPI offers 22 post-bachelor’s certificate programs. New graduate programs such as Data Science (established in 2013) were launched over the past decade in response to demand and emerging fields of study. Over the past decade, WPI transitioned to a more research-focused graduate program, largely supporting Ph.D. students. Additionally, graduate courses were moved to a more traditional daytime schedule. WPI online graduate programs have grown in credit hours by 440% since 2010.

For the past several years, the departments have been receiving “historic” budgets that are largely augmented for salary increases only. Requests for special resources can be made to the Dean who may present specific requests to the Provost. Many Department Heads shared their

frustrations with the process, given that certain resource requests have not been granted even though student enrollment has increased significantly.

Assuring Academic Quality: Various procedures are in place to provide academic oversight that engage the administration, faculty, staff, students and various committee processes. At the graduate level, these procedures may vary across departments. Further details are described below.

Undergraduate Degree Programs: The WPI Undergraduate Catalog lists the Educational Objectives, Program Outcomes, and/or Student/Learning Outcomes for each program along with specific requirements. The requirements align with the degrees awarded. WPI has no prerequisites for courses since students work with faculty to determine if they have the knowledge and skill level to enter an upper-level course.

A major cornerstone of the WPI program is the capstone projects, and these are used as a mechanism to assess primary learning outcomes. These projects are central to the WPI mission. In the junior year, students complete an Interactive Qualifying Project (IQP), which for a majority of students is conducted off campus and oftentimes in an international location. In the senior year, the Major Qualifying Project (MQP) typically is completed on a topic within the student's major discipline. Additionally, students may choose to enroll in the Great Problems Seminar (GPS) in their first year at WPI. The newly created Global School administers the program, which currently is operating at capacity.

General Education and Majors: Of the 135 credits required for graduation, 9 are designated as free electives, 54 are specified within the major (inclusive of the MQP), and the remaining 72 credits fall within the categories of: IQP (9 credits), Humanities and Arts (18 credits), Mathematics and Science (18 credits), Social Sciences (6 credits), Physical Education (3 credits), and Distribution Requirements (18 credits specified by the major). The Humanities and Arts (HUA) requirement (18 credits) is divided into thematically related areas where students complete at least 9 credits of related work (depth) that leads to an Inquiry Seminar or Practicum in that discipline. Students complete at least one Humanities/Arts course in an area that is different from their depth area. Alternatively, students may satisfy the 18-credit HUA requirement with a six-course sequence of study in a foreign language. Undergraduate students have the luxury of choosing among various majors which afford students with the opportunity to develop a depth of knowledge and skills in a specific disciplinary area.

Graduate Degree Programs: The Committee on Graduate Studies and Research (CGSR) oversees all graduate-level programs, and reviews and recommends actions on matters such as programmatic changes, student recruitment, admissions, academic standards, teaching and research assistantships, scholarships and fellowships. The committee also plays an important role in issues such as student dismissal for failure to meet academic standards, and evaluation of student petitions on academic matters. The committee reviews and recommends changes in policy on the funding, promotion, and conduct of research at WPI.

With few exceptions, the graduate catalog and websites for WPI do not state learning outcomes or program educational objectives for graduate programs. Program assessments or formal reviews of masters and Ph.D. programs rarely, if ever, occur except for the formal accreditation process for the business school programs by AACSB. Nonetheless, various departments assess programs and learning outcomes through, for example, projects, theses/dissertations, qualifying examinations, student annual reports, course evaluations, and committee reviews. WPI makes graduate student research visible through its annual Graduate Research and Innovation Exchange (GRIE). In 2018, WPI also implemented the Three Minute Thesis (3MT) competition for graduate students.

In the past, graduate students expressed frustration with advising, particularly those in online programs. Over the past decade, there has been a focus on enhancing graduate student support and community building. This includes the addition of Student Success Managers that guide and check in on graduate students (online and residential).

Department heads are responsible for the resources necessary to operate graduate programs, including faculty teaching and service assignments. Graduate-level teaching assignments may include in-person or online teaching. Faculty advise graduate students in research largely depending on the availability of funds (e.g. grants and teaching assistantships) to support tuition and stipends.

Integrity in the Award of Academic Credit: WPI divides the academic year into four 7-week terms, and undergraduate students typically enroll in three courses per term. Every undergraduate course carries 3 units of credit (with few exceptions), where 3 units should equate to 15-17 hours of work each week. Undergraduate degrees require the completion of the equivalent of 135 semester credits. Students typically complete the bachelor's degree in four years.

Undergraduate students complete a survey at the end of every course that asks for time spent outside of class. When the average time on task is unusually high or low for a particular course or instructor, the department head is asked to meet with the faculty member to discuss the issue. The university continues to analyze these student survey results to consider programmatic or course-related changes.

Most graduate programs use a standard semester schedule and standard measure for credit. A 3-credit graduate course meets three hours each week and expects an average of six hours per week outside of class. Masters degrees require the completion of 30 semester credits.

Program requirements and course descriptions are available in the undergraduate and graduate catalogs and on associated websites. All academic policies and procedures for the evaluation of transfer credits are also published in the catalogs and website. Transfer credits are processed by the Admissions Office, but final decisions regarding transfer credits are made by faculty in the appropriate academic department. WPI generally gives credit for college-level courses with a

grade of B or higher. WPI has articulation agreements with two community colleges. Graduate students may transfer up to one-third of the credit requirements of a graduate degree at their department's discretion.

Educational objectives and student/learning outcomes for the undergraduate programs are consistent with the mission of the university. For those programs that employ an accrediting body to review academic programs, e.g. Accreditation Board for Engineering and Technology (ABET), there is a clear process for assessing overall academic effectiveness. However, those programs without such oversight do not (with few exceptions) appear to employ an extensive evaluation process. WPI does employ a formal assessment process for the required projects (IQP and MQP) as a primary measure of student learning. Ten different student learning outcomes are used by faculty to assess base knowledge, communication skills, global and intercultural competencies, and more. Student surveys also are conducted at the completion of the IQP and MQP, and ratings associated with learning self-assessment typically fall in the 4-5 range (with 5 being the highest rating). A comparison of 2016 to 2019 data does not show significant differences. IQP scores were relatively high for metrics such as an "ability to express oneself orally" (87% rated 4 or 5). However, "ethical responsibility of researchers" scored relatively low (22% rated a 4 or 5). The Undergraduate Outcomes Assessment Committee (UOAC) reviews assessment data, plans for future assessment, and reports to the faculty Committee on Academic Policy (CAP) when data indicates the need for program or policy review. The self-study and meetings with WPI faculty and staff did not offer significant insight to changes made from analysis of this data.

Academic advising is periodically assessed by the faculty governance Committee on Advising and Student Life (CASL). In 2017, CASL presented several recommendations to the Provost to augment advising. Recommendations have been adopted to varying extent by different departments, but further implementation may be necessary.

The Morgan Teaching and Learning Center works with faculty to develop a culture of student learning assessment to guide improvements in teaching practice and curricular change.

Standard Five: Students

One of the most consistent messages received during the institutional visit was the utmost importance of the student experience. The visiting team heard this from everyone ranging from the Board of Trustees to upper administration to faculty members to different student-facing staff offices. All echoed the theme of "students first." The students, in turn, describe WPI as being a "community" that is "collaborative" in which "we don't compete with each other -- we compete with the big problems in the world." The result is a strong feeling of community that is experienced not only by students, but everyone affiliated with the university. Staff and students also commented on how supportive WPI is of innovative ideas, but noted that the institution is reluctant to sunset programs, which contributed to some feelings of stress due to workload.

Admissions: As noted earlier, WPI made a strategic decision to increase the undergraduate population from 3,537 students in 2010 to 4,804 in 2020, a 35.8% increase. This increase could occur because of a 69% rise in undergraduate applications. Contributing to this rise was WPI's decision to become the first STEM-focused, top-100 national university to eliminate standardized test scores for either admissions or merit aid. Once studies showed no statistically significant difference in the six-year graduation rates for students selected with and without test results, the faculty voted in favor of WPI becoming test-blind in undergraduate admissions in March 2021.

The undergraduate demographics of the institution have changed markedly in recent years. From 2007 to 2020, the number of female students increased from 25.9% to 40%. The admissions office developed overnight programs for female students; recruited at all-girls high schools; developed community partnerships with organizations such as Girls that Code and the Girl Scouts of Central and Western Massachusetts, and leveraged merit aid to female applicants.

During this same time period, BIPOC students increased from 7.6% to 13%, and an institutional goal is to continue to further diversify the incoming class. Since 2017, WPI has invested \$477,000 in summer pre-collegiate pipeline programs, which has resulted in 17% of BIPOC applicants enrolling in 2019, compared to 8% in 2016. In 2020, the Undergraduate Admissions Race and Equity working group was formed, and admissions staff are trained about implicit bias each year before the application reading period begins.

In 2019, WPI established the Great Minds Scholarship for ten first-generation, Pell-eligible students from Worcester Public Schools to meet their full demonstrated financial need. To increase the number of low-income students, WPI joined the American Talent Initiative. To better support first-generation students, WPI developed the Innovations Residential Community in which first-generation students live with each other and are matched with staff and faculty Innovations Fellows. The Class of 2022 was the first to receive \$5,000 scholarships, so students can select their Interactive Qualifying Project (IQP) program site based on intellectual interest rather than the cost of participating in their project.

As WPI looks forward, it acknowledges that there are challenges. The average high school GPA of entering undergraduates is 3.8 and, therefore, WPI competes with private institutions that have greater name recognition and larger endowments per student. WPI also competes with public institutions that have lower costs, allowing for less debt upon graduation. The WPI yield rate ranges from a high of 33.2% in 2017-2018 to a low of 27.4% in 2020-2021. While WPI students will likely have multiple job offers and strong starting salaries, the prospect of loan debt ranging from \$42,737 (AY 2016-2017) to \$48,056 (AY 20-21) can be daunting. WPI will need to plan carefully as increasing loan debt may signal upcoming challenges in student recruitment as well as funding the academic enterprise based on high net tuition.

WPI has a notable amount of summer melt, ranging from 7.5% to 9.0%. In one session with members of the visiting team, a staff member said, “No one owns the student experience in the summer before matriculation.” Having a detailed communications plan may help lessen melt. Finally, following national trends, WPI recently experienced a 44% decline in international applicants.

WPI has had a robust graduate student population with an average full-time graduate student headcount of 852 students over the last five years. During this same time, WPI had an average of 1,186 part-time graduate students. The yield rate for master’s students ranges from 27.6% to 37.7%, and for doctoral students from 33.1% to 44.9%. Diversity at the graduate level lags behind diversity at the undergraduate level: 30.57% of graduate students (full-time master’s, part-time master’s, doctoral) are female and 10.27% are BIPOC students.

Recently, WPI has experienced a decline in the number of graduate students, in part because of declining numbers of international students and in part because of the pandemic. Enrollments for in-person master’s programs were particularly hard hit while enrollments for on-line master’s programs and enrollments for Ph.D. students increased. WPI has encouraged its bachelor’s degree candidates to enroll for master’s-level programs by offering a 20% tuition discount. In recent years, WPI has also made an intentional investment of staff time and resources to improve the experience of graduate students by offering workshops on topics such as research skills development, professional communication skills, and how to be successful in an academic job search.

WPI is finishing a five-year admission plan for enrollments at the undergraduate and graduate levels. Enrollment targets are determined by the President, Provost, CFO, and other administrators in consultation with the admissions offices. Undergraduate admissions are centralized. Two faculty committees help provide oversight, one focused on academic policies (such as the test-blind policy) and one focused on academic priorities. Undergraduate Admissions conducts fall meetings with each academic department prior to the recruitment season to learn about the cohort of students who are in their first year, as well as any changes in the curriculum.

The Graduate Studies Office is responsible for the centralized recruitment of graduate students. Admissions at the graduate level may be centralized or based in the department for master’s programs. For Ph.D. programs, admissions are solely the responsibility of the faculty and the department. The GRE requirement was suspended during the pandemic, and the departments now are in active discussion about whether to reinstate a testing requirement at the graduate level. If the graduate programs were to follow the example of Undergraduate Admissions and become test-optional, there may be a larger number of applicants and greater diversity in students who enroll. Online graduate students receive a student success manager when they matriculate into the program, while in-person graduate students experience different levels of onboarding depending on their department and degree level. This area could also be one of growth for WPI.

Student Services and Co-Curricular Experiences: Office after office highlighted how much they enjoy working with students, with multiple staff members commenting that they have never stayed at an institution as long as they have at WPI. The feelings of community were especially evident in student-facing staff offices, such as Student Affairs, Academic Affairs, and Diversity, Equity and Inclusion.

High-Level Observations

Three consistent themes emerged from student-support offices. The first was the need for additional staff resources, which was echoed by students. Students specifically named Academic Advising, Accessibility Services, and Career Services as needing more staff. Students also indicated frustration with Workday which may imply the need for more resources in the Registrar's Office. In addition, students spoke about the need for more support for mental health and wellbeing.

The second theme was insufficient space. Comments ranged from lack of enough housing for undergraduates to wanting to have offices such as Oasis House physically located on the main quad to the need for offices that deliver overlapping services (health and wellness, counseling, health services) located in the same building to the small footprint for dining services at peak times. Students also described the need for additional group study space in multiple forums.

The third theme from staff in student-facing offices was that some students do not have the skills to navigate the college experience independently and so some parents tend to involve upper administration if a situation is not resolved in the manner or timeframe desired. This creates obvious problems for the staff trying to do their jobs.

These overarching concerns about workload, space, and student and parent expectations suggest that WPI should examine whether enough resources have been assigned, given the growth in the student body, the impact of the pandemic, and the changing nature of students. WPI also should determine when it may be wise to break from the traditional budget cycle of requesting departmental funds in the fall and awarding them in the spring, with no or few additional funds available if there is a surge in class size.

Student Affairs' work has been guided by a strategic plan. This bottom-up project identified six areas for growth: health and safety; increases in diversity education and programming; a more welcoming environment for students of diverse backgrounds; increases in student resilience; student reflection; and an enhanced graduate student experience. Accomplishments from the plan include instituting "lived names" in health services and an emphasis on a student's "major and mission" as a way to think about combining curricular and co-curricular interests. According to the Enrolled Student Survey, 88% of undergraduate students are generally satisfied or very satisfied with their WPI experience, and this holds consistent for both BIPOC and international student populations. A survey for the graduate student experience currently is being planned.

Undergraduates are welcomed to WPI with a four-day orientation followed by the Insight Program in which a faculty member, and a returning student are paired with 25 first-semester students. It was suggested that perhaps Insight could be grown into a First-Year Experience course which would teach important academic, social, and health and wellness skills, with a special emphasis on executive function and navigating a college environment. Prior to Fall 2021, graduate student orientation programs were rooted in the academic departments. The Graduate Student Association ran on a platform requesting that new graduate students receive additional resources upon entry, and a centralized graduate student orientation has been initiated, effective Fall 2021.

Housing is a pressure point for WPI due to growth in the undergraduate student body. First-year students are guaranteed housing while returning students are not. Campus housing has an occupancy rate of 96% with approximately 2,300 students or 62% living on campus in 12 residential buildings. In 2013, Faraday Hall was added to the housing stock, and in 2018, Messenger Hall was added. Some first-year students are living in a converted hotel that is a ten-minute walk from campus, partly isolating this population.

Prior to COVID, there were plans to break ground on a new residence hall, which have been delayed. Housing is staffed by professional live-in staff with a large cohort of approximately 800 students each, augmented by Resident Advisors who each have a large number of residents under their care. A proposal for a second new residence hall is being reviewed by the Board of Trustees. WPI is investing in a five-year dining renovation plan to improve services and facilities. Graduate students live off campus and can purchase meals in the dining halls.

In the last ten years, undergraduate academic advising had grown from five advisors to eight advisors, each with a different academic focus. Advisees are assigned by major, and the advising staff maintain connections with the academic department(s) that they represent. Theoretically, undergraduate academic advisors work with advisees until the declaration of major. However, many students continue to see their staff advisor following declaration of a major. Undergraduate academic advisors also work with students who are struggling academically. While academic advising is not required for undergraduates, demand for the service outpaces the available number of advising appointments. Advising is augmented by the Math and Science Help Center, which is open evening hours, and the Tutoring Center which offers support in 30 of the highest need subjects for first-year students. Students asked for greater administrative messaging that there be no stigma for taking an NR grade.

Master's-level students are advised by either graduate services or the department; Ph.D. students are advised by faculty in their department. Two years ago, Graduate Student Services began a more proactive approach to supporting students. Every graduate student receives a phone call and/or email at the beginning of the semester as a check-in. While graduate students appreciate this gesture, they report challenges with uneven faculty advising, course offerings that often are changing and thus making it difficult to complete their degree in a timely fashion, and a

confusing credit system with one definition of credit hours for undergraduates (units) and another definition of credit hours for graduate students (credits).

Given WPI's goal to grow its Bachelor's/Master's program and given that many classes have both graduate students and undergraduates enrolled in the same class, having the same definition for credit hours at the undergraduate and graduate levels would be ideal. Several graduate students reported that because the number of credit hours for a class can vary, depending on whether the student is an undergraduate, a graduate student, or changes when a student transitions from one status to the other, there are cases where students are surprised to learn that they do not have enough credits to graduate. Graduate students also asked for more depth in their Ph.D. courses, more transparent information about a faculty researcher's work style and expectations, and a better articulation of how graduate students are expected to balance coursework, research and TA responsibilities.

From AY 2020-2021 until October 2021, the number of undergraduate and graduate students with documented disabilities increased from 635 to 722, an increase of 13.7% within only a few months. Students often are presenting with multiple documented disabilities, and Accessibility Services cannot provide the same level or kind of support that many students received in high school, which is frustrating to staff, students, and their families. About seven years ago, there would be an average of 16 requests for reduced course loads. In AY 2021-2022, there are over 50. Demands for seats at the testing center are above what the center is able to offer while maintaining a low-distraction environment. Because of insufficient seats, staff are spending administrative time negotiating with faculty about when exams can be started or how an exam can be administered. While the new space that Accessibility Services will be moving into does have a larger testing center, it is likely that the space is already smaller than what is actually needed by students and faculty.

Career Services (9 FTE staff members) supports both undergraduate and graduate students, as well as alumni, but many graduate students, particularly Ph.D. students, perceive the office as primarily undergraduate facing. In 2019-2020, 75% of undergraduates, 40% of master's students, and 42% of Ph.D. students used these services. With the growing class size, wait times can be 7-10 days for service during the academic year. WPI has cultivated over 23,000 approved employers, and it is not unusual for graduates to receive between three and six job offers by the time they graduate. While these outcomes are excellent, WPI may wish to consider expanding its Co-op program, which offers for-credit academic-year internships, as both students and employers are requesting such. Post-graduation outcomes data shows that within six months of graduation, at least 90% of undergraduates are employed, in the military, or in graduate school.

Clubs and Athletics provide an important counterpoint to the academic experience. Approximately fourteen years ago, there were 145 clubs, compared to 230 now, an increase of 58.6%. Fraternities and sororities engage 31% of the undergraduate student community. Community service is an important WPI value, with students logging over 31,000 hours of service to the Worcester community in 2019-2020. In the last ten years, club sports have grown

from 30 to 42, a 40% increase. WPI has 9 women's varsity sports teams and 9 varsity men's sports teams. In discussions with students, they valued sports events and the community feeling that the competitions engender.

The wellbeing of students was a topic that took center stage for the visiting team, particularly in the undergraduate listening session. WPI had recent student deaths, and the impact of COVID was still being felt by all community members. CARE team reports were up by 30% from the year before. Counseling services typically see a 10% growth increase each year. In Fall 2021, visits were up by 30%. When a student presents at counseling, they are given an appointment within 24 to 48-hours. In addition to individual counseling, there are 12 group counseling sessions that focus on an assortment of issues from OCD to LGBTQIA identities. In Fall 2021, Health Services has had a 20% increase in appointments, with 5-20 students each day reporting symptoms that could be mild symptoms of COVID. In spite of this, most students can obtain a same-day appointment. Graduate students expressed their appreciation that WPI now supplements the full cost of their health insurance.

These direct services do not fully address students' feelings of stress. One student described faculty, staff and students as "all being burned out." Another student described a faculty member who gave a Zoom lecture while ill, and the student said they wished the faculty member had modeled appropriate self-care by canceling class. Multiple students referenced the administration giving a Wellness Day, but some faculty expected students to come into the lab "since you are here anyway" or issued assignments that were due on the day after the Wellness Day, thus negating its positive effects. Some students asked for greater coordination between classes to help minimize the number of cases where they have multiple exams on the same day. Graduate students explained that they are expected to be in the research labs full-time between A and B periods. Overall, students feel that even when messages of self-care are given, they are largely performative.

WPI will be opening an integrated Center for Well-Being, employing a public health and education model, with paid peer educators. Ideally, Counseling and Health Services will be moved into the same physical space. When the Center opens (or before), students need to learn how to practice self-care, how to make healthy choices, including enrolling in an appropriately challenging, but not overwhelming, course schedule, how to ask for help, and how to navigate the many support services. One student said that WPI has a culture of "saying yes" or doing more, and students need the permission to say no and not feel badly about themselves. Other undergraduate students reported the feeling that the administration expects student leaders in the Residence Halls, fraternities and sororities, and athletic teams to bear the brunt of making sure that other students are okay. While this is likely an unintended or misread message from the administration, it is important to note that students feel like they are being asked to make their student experience less stressful with too little support from professional staff on campus. Students also questioned why some leadership positions use unpaid or underpaid labor, causing additional stress. Finally, students requested to have a more proactive role in decision making

related to health issues, including changes to policies and input on administrative communication.

Students and staff praised WPI for increasing the diversity of the student population. One highly successful program is the Supporting WPI through Effective and Equitable Teamwork to teach students how to work in inclusive teams, both at WPI and after they graduate. International House, or ISSO, is widely praised by undergraduate and graduate students. However, many students and staff called for additional resources. For BIPOC students, the Connections orientation program lasts only one week, and there is need for additional support resources. BIPOC students called for more leadership opportunities and support for their experiences. All students take an on-line orientation program, but only one module is designed to address diversity, equity and inclusion. Women students reported generally positive experiences, but noted that they experienced macroaggressions from their male peers. Gender nonconforming students described faculty and staff as not being respectful of or understanding the desire to be defined by a chosen set of pronouns rather than sex assigned at birth. International students arrive on campus a week early for New Student Orientation, but they come to campus, unpack their bags, and start orientation without the fanfare that domestic students experience. Similarly, international students hold events, but it seems rare for domestic students to attend. Given the age of the WPI campus and its physical location on a hill, WPI is a difficult campus to navigate for students with mobility issues. Students reported that if they are not in the majority, it can be hard to find one's community. The Oasis Center is the hub for all things related to diversity including gender, sexuality, BIPOC, LGBTQIA, and faith, but the center is off campus and serves multiple populations.

Financial aid policies and resources are clearly stated on the WPI website. Student Aid has recently created a new award letter to highlight the benefits of a WPI education, including retention rate, average starting salary, and graduation rate. WPI has a 1% federal default rate compared to the national average of 9.7%. The Office of Student Aid offers financial literacy workshops on topics such as ID Theft and Credit Repair, and a Homebuying Workshop. The Emergency Assistance Fund has distributed 114 grants for over \$102,000. As WPI increases its number of low-income students, this student fund may need additional university resources in order to meet the needs of the student population.

Standard Six: Teaching, Learning, and Scholarship

Faculty and Academic Staff: In Fall 2021, WPI reports 518 full-time faculty members: tenured, tenure-track, and non-tenure-track. The latter group includes full-time teaching and research faculty and instructors. While faculty members hold appointments in academic departments across four schools (Business, Engineering, Arts & Sciences, and Global), the majority (69%) of the faculty are in engineering and the sciences. WPI has several categories of faculty: traditional tenured and tenure-track, tenured and tenure-track teaching or research track faculty, long-term contract teaching faculty, instructors, and part-time adjunct faculty. 84.7% of

the full-time faculty across all ranks have earned doctorates. The student-faculty ratio is 13:1. Setting aside adjuncts, visiting faculty and post-doctoral students, the number of full-time faculty rose by 11.1% between 2016 and 2021. This is slightly less than the 14% increase in student enrollment over the same period.

The path to tenure for the dual-mission teaching and research faculty is traditional. These faculty members are supported at the start of their careers with reduced teaching loads, research funding, and mentoring. The path to tenure for the newly created Teaching or Research Faculty (discussed below) is also well defined. All faculty, tenured and term, are evaluated on an annual basis and the evaluation incorporates goal setting for each faculty member.

As mentioned earlier, the centerpiece of a WPI undergraduate degree is its emphasis on project-based and global learning. Approximately one-quarter of the credits earned by undergraduates in their last two years come from their work on the required IQP and MQP. This emphasis places significant demands on the faculty and professional staff who supervise and support these student projects. Not only does this project work require substantial individual or small-team supervision and tutoring, it often requires the faculty member to relocate to one of WPI's 50+ global project sites for the seven-week term. This is a commitment well beyond the traditional faculty responsibilities for course delivery on campus. From everything the team heard, the faculty at WPI are committed to this high-contact, highly collaborative curriculum and teaching environment. However, the growth in undergraduate student enrollment over the past decade has strained faculty and professional staff resources.

At the same time, as part of its strategic plan, WPI continues to grow its graduate programs, including the Ph.D. Additionally, WPI is moving from primarily part-time master's degree programs to full-time graduate programs and it is working to expand the faculty's research portfolio. The growing emphasis on graduate education and research adds to the workload demands on the faculty.

By all accounts, the faculty are active, enthusiastic, and highly engaged with their students. The teaching mission and the importance of collaborative, project-based learning pervade the academic enterprise. That said, the highly collaborate, project-based undergraduate curricula and the growth in undergraduate enrollments coupled with a growing emphasis on full-time graduate programs and the research enterprise has resulted in concerns about faculty workload and about the growing use of non-tenure-track faculty to deliver academic credits.

Other Issues concerning faculty: In the self-study report, WPI focused on additional faculty issues that have been raised internally. The institution has been making progress in addressing these concerns, as discussed below, but in some cases the work is continuing.

Achieving Diversity Goals for Recruitment and Retention of Faculty.

Faculty searches are handled at the departmental level, following the *Faculty Search Resource Guide* that was prepared by the Provost's Office. According to data provided by WPI during the

visit, the full-time faculty grew from 410 in 2016 to 447 in 2021, reflecting growth in both undergraduate and graduate enrollment. The new hiring has provided an opportunity to emphasize diversity and inclusion in the hiring process. All search committees include a diversity advocate whose primary responsibility is to ensure an open and inclusive search. There is no question that WPI has made a serious effort to build a more diverse and inclusive faculty in a challenging market and it has had some success. The percentage of women in the traditional tenured/tenure-track ranks rose from 26.5% in 2016 to 29.7% in 2021. Over the same period, the number of full-time teaching faculty who are women fell slightly from 33.3% to 32.9%. The percentage of underrepresented minorities in the tenured/tenure-track ranks rose from 6.1% to 8.7% over the same period. In the teaching faculty ranks, the number rose from 4.9% to 8.4%.

The Promotion Process

The results from a 2014 COACHE (Collaborative on Academic Careers in Higher Education) survey of faculty showed significant concerns about the promotion process and criteria, as well as the lack of mentoring at the associate professor level. In response, a faculty task force met with faculty and suggested changes to the promotion process and criteria that were put into effect in 2019. Notably, the definition of high-quality scholarship was broadened to recognize five dimensions of scholarship: 1) discovery, 2) integration, 3) application and practice, 4) teaching and learning, and 5) engagement. Also in response to the COACHE survey, in 2018 the faculty approved a plan to establish a mentoring system for mid-career faculty. An NSF Advance grant provided support for the creation of three-person mentoring teams for all associate professors. Since these new criteria and the associate professor mentoring program were put in place, approximately half of the promotions to full professor have been for women.

Salaries

WPI benchmarks faculty salaries against peer institutions on a three-year cycle. The data suggest that WPI's faculty salaries are comparable to the market median at all ranks, with female faculty being very slightly below the market median (98.01%) and male faculty being very slightly above (102.35%). The self-study reported that the average WPI salary for women is higher than the average for men at the assistant professor and professor levels. Since this difference also is present in the market data, it likely reflects the relative scarcity of women faculty in the engineering and science fields.

Teaching or Research Track Faculty

With the growth in student enrollment, additional faculty teaching resources have been required. At the same time, the strategic plan called for a greater commitment to research by tenured and tenure-track faculty. To address the need for additional faculty resources focused on teaching and to improve the status of its nontenure-track faculty, WPI made substantive changes to the status of full-time teaching faculty. After a grass-roots effort by tenured, tenure-track, and teaching faculty and work by faculty governance committees, in May 2021 the Board of Trustees approved a rigorous teaching track-to-tenure for teaching faculty, with the ranks of assistant, associate, and (full) professor of teaching. Fifteen faculty members were appointed to this track in Fall 2021. The target is 45 appointments by fall 2023. In May 2021, the Board of Trustees also

approved longer-term contracts (beginning with one year, followed by two contracts at three years each, and then continuing with five-year contracts based on satisfactory performance) for the remaining full-time nontenure-track teaching faculty. Also, full participation in faculty governance was granted to all full-time teaching faculty on a tenure track or holding a long-term contract. WPI aims to balance its faculty as follows: 70 percent tenured and tenure-track dual-mission teaching-research faculty and 30 percent full-time teaching faculty. WPI's goal is to balance its full-time teaching faculty (by fall 2023) as follows: 40 percent tenured or tenure-track and 60 percent non-tenure-track, with an openness to further increasing the fraction of tenured or tenure-track teaching faculty in the years that immediately follow.

Faculty overwhelmingly expressed strong support for this change. The TRT Council, formed during the planning process, will continue to operate for now. As the teaching faculty noted, the recognition of teaching faculty as full members of the faculty represents a major cultural change and it will take time for acclimation.

Faculty Activity (Workload) Model

The importance of collaborative project work throughout the academic programs makes measuring workload more difficult than in a more traditional university. WPI currently is working to develop a faculty workload model that is rational, fair, and transparent. In Fall 2021, the Provost charged three working groups, led by academic deans, to analyze WPI's academic portfolio, focusing on: 1) improving the academic budget model; 2) assessing and recognizing faculty contributions/activity; and 3) analyzing program performance. Robust faculty engagement in these task forces will be important for their success.

Support for Teaching and Scholarship

WPI established the office of the Vice Provost for Research (VPR) in 2014 to enhance faculty research efforts and increase external research funding. Sponsored research funding has risen from under \$23 million in FY2017 to over \$56 million in FY2020. The VPR also provides seed money, including \$111,000 awarded to six interdisciplinary teams in collaboration with the University of Massachusetts-Lowell in 2019. The infrastructure for sponsored research is well developed.

Research support for faculty in disciplines with little access to external funding is limited. While some funding for interdisciplinary research exists, these opportunities are few. Faculty in the Humanities and Arts raised concerns that the path to acquire internal funding for research and travel is unclear and that such funding is inconsistently available across departments.

Teaching and Learning: The faculty has primary responsibility for the teaching and research mission of WPI. They are supported by professionals from across campus, including in the Gordon Library, the Office of Academic Advising, the Academic Technology Center, and the Morgan Teaching and Learning Center.

The Gordon Library staff plays an important role in supporting student research. Research librarians generally meet with students as they begin research for their Greater Problems Seminar project and for their global IQP. They often serve as co-advisors on student project work and as academic advisors for first-year students.

WPI utilizes a two-tier advising model; each student has both a faculty advisor(s) in their discipline(s) and a professional academic advisor. The curriculum model is complex, with students having the option to follow many paths. With students choosing combined majors and wishing to accelerate, there is greater need for advising. At the Office of Academic Advising, which focuses on the first two years, the number of advising meetings per week rose from 96 in Fall 2016 to almost 190 in Fall 2019. In the junior and senior years, faculty advising is performed by what one faculty member called the “advising guru” in the department. There is no course release for advising. In 2017, a faculty governance taskforce on “Improving Academic Advising” made several recommendations, including incorporating faculty advising into teaching loads, but that recommendation has not been adopted.

The Academic Technology Center and the Morgan Teaching and Learning Center provide support for faculty development in teaching and learning. The Morgan Center is primarily funded through an endowment and soft funds. It is currently working to expand its mission to include professional development for multiple forms of scholarship and leadership. By all accounts, both units very successfully supported faculty in the transition to online teaching during the pandemic.

Professional staff levels in these areas that support teaching and learning have been flat or declined slightly over for the past three years. With the continued growth in undergraduate enrollment and growing emphasis on research and full-time graduate programs, adequate professional staffing in these areas will be important.

It should also be noted that faculty across the institution felt that department-level budgets have not kept up with rising student enrollment. Additionally, space for the arts programs is sparse. Faculty, staff and students at WPI noted the importance of the arts and humanities in providing an outlet and stress reliever for students. The institution may want to pay additional attention to the adequacy of programmatic offerings and facilities in these areas.

Standard Seven: Institutional Resources

Human Resources: In 2017, WPI reorganized its human resource function as the Division of Talent & Inclusion to reflect its strategic focus on talent management and diversity, equity and inclusion (DEI) and also hired a Vice President of Talent and Inclusion/Chief Diversity Officer. The office serves all employees, faculty and staff.

In Fall 2020, the university had 1,283 employees, 481 Instructional Staff, and 802 other staff. Over the last decade, as enrollment has risen (from 4,828 students in 2010 to 6,649 students in 2020, a 38% increase), faculty and staff levels have increased. Full-time faculty rose from 279 to 381 (36.5%) from 2011 to 2021. Staff levels rose for much of the decade, but have decreased in recent years. This decline reflects efforts of the WPI Forward initiative, started in 2019, that, in part, looked to increase efficiency and reduce redundancies in staffing, resulting in staff reductions.

Talent partners in the Division of Talent & Inclusion work with department leadership to establish sufficient staffing levels. Vacant positions are evaluated for need and possible repurposing. Staffing benchmarking has been done. A compensation specialist recently reviewed the compensation of 90% of employees to ensure salaries are competitive. The university participates in the College and University Professional Association salary survey, which allows the university access to salary data. The university targets a range around the median and considers internal and external factors as well when setting salaries.

To further DEI efforts, the university's hiring, onboarding, and retention practices are guided by the DEI Strategic Framework, particularly objective 4 – Diverse Talent Strategies. Commitments to DEI efforts also are articulated in the Sustainable Inclusive Excellence Plan. For all open tenure/tenure-track faculty and research and teaching positions, searches are national, the position is placed in publications focused on diverse populations, faculty are encouraged to promote positions to professional contacts from wide backgrounds, a diversity advocate is assigned, and each committee must document efforts to reach diverse populations.

Human resource policies are available online in the Faculty Handbook and Employee Benefits and Policies Manual. The Employee manual is revised annually. The Faculty Handbook is updated more frequently. WPI has two union agreements, Service Employees International Union (SEIU) Local 32BJ (7/21-6/24) and Campus Police (7/21-9/26). Grievance policies are included in the faculty and staff manuals and union agreements. The WPI Ombuds Office is also available to address employee issues if an employee desires. Terms of employment are detailed in faculty and staff offer letters.

The Division of Talent & Inclusion has a Learning and Development website that includes resources for faculty and staff, including:

- The Learning Academy, an online portal that provides access to videos, books, audiobooks, white papers, and journals
- Morgan Teaching & Learning Center, a faculty-led unit that maintains and strengthens instructional effectiveness
- Mentoring programs for faculty and staff
- Access to programs from the Higher Education Consortium of Central Massachusetts (HECCMA)
- Access to the National Center for Faculty Development & Diversity (NCFDD)

Faculty support also is provided by the Office of Sponsored Programs, which helps faculty find funding opportunities, prepare proposals, manage awards, and maintain compliance; the Research Solutions Institute (RSI), which helps faculty identify and obtain funding for research;

the Gordon Library; and the Technology for Teaching and Learning team, which includes designers focused on working with faculty on the application of technology for teaching and learning. Student Affairs provides regular training to identify students in distress. Divisions are provided with annual budgets for professional development. Specific trainings, for example, FERPA and PII, are assigned and must be completed.

Staff undergo an annual review supported online by Workday that includes a written self-appraisal, a written manager evaluation, and discussion about performance. Faculty have a similar review process. Each faculty member submits an annual report, which guides development and planning.

Financial Resources: WPI has a good record of responsible and strategic financial management. The university is moderately sized with \$290 million in revenue in fiscal year 2020. From 2011 to 2020 the university produced unrestricted operating surpluses, with the exception of FY 2020, which included the beginning of the pandemic. In the five-year period from 2015 to 2019 the average operating margin was 3.1%, ranging from 2.0% to 4.9%. The university also has good wealth levels, with \$564 million in cash and investment at the end of fiscal year 2020. Net assets have consistently grown with the 5-year compound annual growth rate (CAGR) of 2.8%, to a total of \$652 million as of June 30, 2020, 46% of which are unrestricted. After a decline at the end of FY 2020, just after the market declines due to the pandemic, the endowment reached a high of \$582 at the end of calendar year 2020. The FY 2021 audited financial statements are not quite finalized, but preliminary results show an unrestricted operating surplus of 3.7%, cash and investment at fiscal year-end of \$710 million, a cash flow margin of 11.8%, and net assets of \$804 million (a 5-yr CAGR of 6.1%).

The university issued debt in recent years to fund components of its Five-Year Institutional Plan. Long-term debt increased from \$278 million at the end of FY 2019 to \$409 million at the end of FY 2020, increasing the university's debt-to-net-assets from 0.41 to 0.63, a significant increase. In March 2020, Moody's downgraded WPI's bond rating from A1 to A2, setting the outlook at stable. The decrease was due to the material increase in the university's leverage with long-term debt rising to more than \$400 million. Moody's noted relatively high debt-to-cash-flow and low spendable-cash-and-investments to debt compared to peers. Mitigating this, Moody's did note WPI's strong wealth, strong management team, historically strong demand for its programs, and historically strong operating cash flows. At this same time, Standard & Poor's lowered WPI's debt rating from A+ to A.

WPI is a tuition-dependent university where, in FY 2020, 64% of the \$290M in unrestricted operating revenues came from net tuition and fees (tuition and fees net of financial aid). Gross tuition and fees totaled \$281.2 million and financial aid totaled \$96.6 million. Cost of attendance when living on campus for academic year 2022-2023 is \$76,326. According to the FY 2020 audited financial statements, 65% of expenses were for education, research, and service while 31% were for Auxiliary Services and Institutional and Academic Support, which are in support of the educational mission.

WPI's fundraising is an important contributor to its financial stability. Fundraising provides spendable funds to support annual needs and endowed funds to provide sustained programmatic

support over generations. WPI's *If...The Campaign to Advance WPI* (2008-2015), which had a goal of \$200 million, raised \$248 million: \$110 million for financial aid, \$36 million for academic support, \$52 million for facilities, and \$50 million unrestricted. WPI's newest, ongoing campaign, *Beyond these Towers: The Campaign for WPI* (2018-) aims to raise \$350 million in philanthropy and \$150 million in research. As of June 30, 2021 the campaign had raised \$191M in philanthropy and \$133 million in research, 65% of the goal.

Of concern is WPI's cost of attendance. The board is aware and engaged on this issue. WPI's own admitted student questionnaire (ASQ) has indicated increased price sensitivity of prospective students and families. In academic year 2020-21, the benchmark peers' average Net Price was \$40,747 while WPI's average Net Price was \$49,050, 20% higher than its peers. A factor in this is the relatively lower financial aid provided by WPI. For the 10 academic years 2009-10 to 2018-19, WPI's discount rate for first-year students was below the peer average all but one year, ranging from 38% to 46.8%, and the lowest of its peers except for one year between academic years 2014-15 to 2018-19. WPI's leadership and board understand this challenge. The university's strategic plan articulates that increasing financial aid is a critical initiative, as is adjusting overall policy and practices to ensure a competitive net price while also adjusting for demographic changes.

During the pandemic, the university has demonstrated very well its ability to manage a financial emergency. During the pandemic, the university strategically cut costs and redirected savings to pandemic-related support to continue its core mission. Excellent coordination by the CERT committee, which included administrative leadership and others from across campus, allowed the university to continue serving its mission, thus supporting WPI's ability to maintain financial stability.

The university's finances are managed well. A new, experienced Executive Vice President & CFO started in August 2021. The EVP/CFO also serves as the Chief Investment Officer and oversees accounting, finance, financial planning and analysis, operations, campus facilities and planning, campus police, and information technology. His finance offices are staffed by professionals, including CPAs.

The university has a 5-year rolling operating budget model and annual operating and capital budget development cycles. The EVP/CFO, in collaboration with the President and Board, lead an annual collaborative process, called the Annual Planning and Budgeting Process (APBP). The process allows leaders and financial managers from each division and faculty representatives to present short and long-term plans. This enables cross-functional understanding of plans, opportunities and risks, and includes requested resources. The process also includes discussion of long-term perspectives and forecasts. With the arrival of the new EVP/CFO, the university is at the initial stages of introducing activity-based budgeting, expected to be rolled out in fiscal year 2023. The goal of the new budget process will be to invest in programs that are having success and reduce funding for programs that are not meeting expectations. The Board's Budget and Finance Committee (as well as the Facilities and Infrastructure Committee) reviews budget parameters and assumptions each February and reviews and recommends to the full Board approval of the final budgets in May. The finance office reviews progress against budgets throughout the year.

The university also uses a long-term financial planning model and has identified important financial indicators (e.g. cash flow margin, leverage ratio) with peer and target thresholds to measure the financial condition/strength of the university.

In addition to the work of the Budget and Finance, and Facilities and Infrastructure, Committees there are several other committees of the Board with finance and risk oversight responsibilities. The Audit and Risk Committee reviews the institution's enterprise risk management (including the risk register), external audits (including annual financial audit and uniform guidance audit), regulatory compliance, internal controls, and contingency management, as well as overseeing the internal audit function, which is provided under contract by the Boston Consortium. The Investment Committee oversees WPI's investment policies and manages the investment of the endowment. The Facilities and Infrastructure Committee oversees facilities and infrastructure and related budgets.

The university has written debt, investment, and gift policies and published financial operations policies (e.g. purchasing policy, business expense policy).

WPI has a comprehensive emergency preparedness and disaster recovery program, written Business Continuity Plan, and a Director of Emergency Preparedness, and emergency operations center. With these components in place, the university has been well prepared for planned events (Commencement), low-impact incidents (inclement weather), and high-impact emergencies (the pandemic).

Information, Physical, and Technology Resources:

Information Technology

The university's Information Technology division is led by the Vice President for Information Technology and CIO. The IT infrastructure is comprehensive and coordinated with WPI's strategic plan. The division has a \$16 million annual budget, 86 staff, and 35 student workers.

The division includes the Change Management, Training, and Communications team, the Enterprise Information Systems team, the IT Infrastructure team, the Information Security team, the Academic and Research Computing (ARC) team, and the Academic Technology Center (ATC).

The division collaborates with the community in several ways. There is an IT Governance model with steering committees and working groups. The division partners with the Provost through the Academic Technology Advisory Board. The division is engaged with the 5-year and annual capital budget cycles. The division has instructional designers who help faculty convert courses to online delivery. The division has worked with the Classroom Advisory Committee, and Security, Research, and Compliance Committee.

The division has been involved in significant changes in the last decade. Most notably, the division led the four-year Enterprise Transformation Project (ETP). This included implementation of two modules of Workday - Human Capital Management (HCM):

Finance and Students, plus a new Identity and Access Management system, a new data analytics repository, and an eProjects upgrade.

The division also transitioned to a new learning management system, added ubiquitous remote access to WPI-hosted software and systems, created more online training, expanded its services to incorporate new technologies that support on-campus, online, and hybrid courses, equipped all classrooms with lecture capture technology, and created ten new policies to safeguard and protect systems and information.

IT supports over 200 academic software applications and productivity tools and continually measures key performance metrics to ensure adequate resources for students and faculty.

External vendors performed full security assessments in 2018 and 2021. An internal security assessment was conducted in 2020. IT uses a variety of security tools and independent assessments to assist in implementing the controls, remediating the gaps, and achieving the target profile that helps provide a secure state.

Information/Library

WPI's Gordon Library has 760 student seats, 17 staff, is open 107 hours per week during the academic year, and is visited over 14,000 times a week. The library emphasizes digital access with almost 467,000 digital collection downloads and 56% of annual budget dedicated to providing access to information.

Access to study and meeting spaces is a priority. The building includes eleven team meeting rooms with wireless screen-sharing software; has a digital scholarship lab equipped with touchscreen computers, scanners, and visualization technologies; and virtual teaching technologies that include hybrid virtual conferencing technology and a Revolution Lightboard in a studio for faculty use.

The library performs annual student surveys and consults with its student advisory group to assess needs. The library collaborates with the Facilities division regarding sustainability. Student use of the library has continued to outpace capacity. Data show high use of the library, with "more space to study" as one of the highest priorities identified by students.

The library has two standing advisory groups -- a board of students who meet monthly with library staff and a joint eProjects-Digital WPI advisory group composed of faculty and academic leaders and experts who provide input on priorities and practices for these two systems.

The library is reinitiating plans for a series of renovation projects over the next five years that will modernize and expand student study spaces. In spring 2020 an initial set of architectural designs were completed for the first two major projects in this phased plan. Longer-term plans include projects that will enhance the sustainability and energy-efficiency of the 55-year-old Gordon Library building.

Physical Plant

WPI's campus covers 95 acres and consists of 86 buildings with over 1.4 million net assignable square feet of space (excluding parking). The visiting team toured over a dozen buildings and much of the campus. Some of the buildings are old, and even historic. The facilities and grounds appear to be in excellent condition. The new facilities are helping meet the space needs defined in the strategic plan.

WPI has added significantly to its physical infrastructure over the past 10 years. Additions include the Sagamore Research Building, Innovation Studio, Messenger Residence Hall, Faraday Residence Hall, a Sports and Recreation Center, Gateway II Research Building, Parking Garage with Rooftop Sports Fields, 85 Prescott Street, 108 Grove Street, and WPI Seaport. Harrington Auditorium was renovated. Total cost for this infrastructure was almost \$200 million.

In addition, a new 100,000 square-foot academic building will be completed in January 2022. A new residence hall is planned in the near future and renovation to three academic/research buildings are planned in the next five years.

The 5-year capital plan (2019-2023), updated in 2020, includes \$90 million for deferred maintenance.

The university conducted a space study in 2016, which informed some of the recent improvements. The university now is conducting a new space study to reassess needs and inform future plans. During the space studies, academic, student-life, and administrative units identify space needs.

Facilities are maintained and constructed in accordance with legal requirements and must pass inspections annually where appropriate.

Standard Eight: Educational Effectiveness

WPI defines student success as having the ability to learn and put this learning into actions that matter. Thus, in addition to collecting and evaluating standard data, such as retention and graduation rates, the major assessment efforts are directed at the evaluation of three major undergraduate requirements for graduation: the Major Qualifying Project (MQP), the Interactive Qualifying Project (IQP), and the Humanities and Arts Capstone. This assessment practice was set forth by the WPI Plan in 1970 and has been evolving ever since.

Retention and Graduation Rates: The majority (94% in 2021, 97% in 2020 and 2019) of undergraduate students entering WPI are traditional first-time-in-college (FTIC) students; thus, data developed for IPEDS reporting is useful in the assessment of their retention and graduation. The overall first-to-second-year retention of FTIC students stands at 95%, which is higher than the national average and on par with WPI's peer institutions (Carnegie Mellon 97%, RPI 92%, RIT 90%). The institution further disaggregates the retention and graduation data by the subgroups within the student

body: URM students, Pell Grant recipients, first-generation, women, and international students. The retention for each subgroup for each of the last four years was above 90%, varying between 92% and 98%.

WPI's six-year graduation rates for full-time undergraduates ranged from 85% for the fall 2008 cohort to 89% for the fall 2014 cohort and are far higher than the national average of 60% for the 2014 cohort. As compared to the same set of peer institutions (Carnegie Mellon, RPI, and RIT, whose reported rates are 90%, 83%, and 73%, respectively), WPI's graduation rates are similar or higher. As with retention rates, WPI disaggregates the data by population. This analysis shows that international and women students complete degrees at a slightly higher rate (by 2-4 %) than average and URM students and Pell grant recipients.

Similarly, the retention and graduation rates for graduate programs are high. Over the last four years, the first-to-second-year retention rates in master's programs were 92-95%, and in doctoral programs were 93-96%. The graduation rates at 150% time for master's programs are 92-94%.

In an effort to begin their work in addressing the affordability of education, WPI tracks the percentage of students graduating with debt. Over the last decade, the number of students graduating with debt from WPI went down from 74% (2011) to 64% (2020) as a result of efforts by the institution to increase financial aid opportunities that offset tuition increases. Since the last self-study, the institution updated the reporting and tracking mechanisms to better capture student loan debt (both federal and total debt) of graduates. The analysis showed that the federal loan debt remained the same for a decade: about \$25,000 for undergraduate and \$30,000 for graduate students. The total debt for undergraduate students increased from \$42,700 in 2017 to \$48,000 in 2020. This analysis contributed to the institution's decision to make educational affordability a priority for WPI's 2021-2026 strategic plan.

Other measures of student success: In accordance with NECHE standards, WPI uses multiple measures of student success (e.g., job and graduate school placement, levels of current students' satisfaction, alumni perceptions of the value of their education) and uses various methods to collect and assess data relevant to these measures.

The Career Development Center uses the First Destination Survey to collect data on graduates' first jobs. For the 2020 graduating class, WPI reports that 93% of its graduates (at all levels) are either employed, enrolled in graduate school, or engaged in the military or volunteer service. The job placement data is further disaggregated by the educational level and by program, providing the basis for granular analysis. Over the last four years, the percentage of students continuing on to graduate studies increased from 19% in 2017 to 34% in 2020, which is seen by the institution as a success. WPI also collects and reviews data on the initial salary of graduates. In 2020, the mean annual salary for undergraduate students seeking employment was just under \$73,000 (\$11,200 higher than for the 2013 class). This average often appears on "top-10" lists for starting salaries, which is viewed institutionally as a reflection of success for WPI graduates. For the same

year, salary results for graduate degree recipients show that master's degree recipients were earning on average \$84,957 and Ph.D. recipients earned \$101,769, on par with industry standards. The trustees, administration, and faculty exhibit pride that employers prefer WPI graduates to the graduates of many other schools.

A thorough Alumni Study to assess the long-term results of WPI's education was commissioned by the institution in 2012. The results of the study, performed by the Donahue Institute, confirmed that project-based education had a favorable impact on alumni's professional and personal growth. Specifically, more than 85% of surveyed alumni agreed that project work had a professional impact and more than 79% agreed that the project work had a personal-growth/world-view impact. The study also showed that alumni who had an off-site project experience reported higher learning gains in 21 out of 24 questions related to undergraduate learning outcomes, which provided strong evidence for the expansion of the Global Projects Program. As a result of this assessment, in its 2015 strategic plan *Elevate Impact*, WPI set the goal of making a global project experience accessible to all undergraduate students. Since then, WPI increased the number of off-site IQP centers to more than 50 and provided an additional \$5,000 scholarship for every student engaged in an off-site IQP. As a result, about 90% of second-year students are applying for an off-site IQP option.

WPI uses national-level assessment instruments, such as the Noel Levitz Student Satisfaction Survey (Noel Levitz), Enrolled Students Survey (ESS) and National Students Satisfaction Survey (NSSE). Noel-Levitz was conducted in 2012, 2014, and 2016. ESS was completed in 2019 (WPI has replaced Noel-Levitz with ESS). Among the students who responded to the 2019 ESS survey, and consistent with past Noel-Levitz surveys, 88% were generally satisfied or very satisfied with their WPI education so far, with 88% indicating that they would attend WPI again. The same survey showed that only 75% of students were satisfied with study space. As a result, a collaborative workgroup was formed in partnership with the Student Government Association, Facilities, Undergraduate Studies, the Gordon Library, and others to assess campus study space and make it easier to find unoccupied space on-campus through a phone-based app. It appears, however, that this solution has not fully addressed the need – the team heard from multiple students that the amount of study space is still not adequate.

Student Learning Outcomes Assessment: WPI outlines the undergraduate student learning outcomes as well as outcomes for each program of study in its catalog, available on the WPI website. The goals for student education are informed by the institutional mission. The institution identifies the student learning outcomes (SLOs) for programs at all three degree levels: bachelor, masters, and doctoral. The undergraduate SLOs reflect the statement of values for undergraduate education at WPI, also found in the catalog. It was confirmed in a meeting with the Undergraduate Outcomes Assessment Committee (UOAC) that there is institution-wide understanding of undergraduate student learning outcomes.

Undergraduate SLOs assessment

The WPI Plan does not specify the usual structure of prescribed courses and, instead, as described earlier, mandates that students complete three requirements: the Interactive Qualifying Project (IQP), the Major Qualifying Project (MQP), and the Humanities and Arts requirement (HUA). In 2004, WPI developed ten Undergraduate Learning Outcomes; Learning Outcome #8 was modified in 2019 to articulate the university's mission as a global polytechnic institution. These ten institutional-level outcomes are mapped onto outcomes of the IQP and the MQP. As such, the educational effectiveness at the undergraduate level is assessed through student performance in these projects.

The assessment data for IQP and MQP are collected and evaluated annually, except for the past three years. Since the institution engaged in transitioning from Banner to the Workday system, the collection of assessment data (which used to be performed within Banner infrastructure) occurs through another system, eProjects; however, this data is not easily available to faculty, committees, and administrative offices. It was confirmed in conversation with the Institutional Research (IR) office that there is a plan to create dashboards to address this need; however, this does not appear to be a top priority. Meanwhile, the IR office provides the relevant information by individual request.

The students' achievement of learning outcomes in IQPs and MQPs are assessed using the data collected through the following methods:

Students are asked to record their self-assessed levels of progress on each IQP or MQP outcome. The assessment survey is built into the IQP/MQP submission process, and, as such, the response rate to this survey is very high (90-95%). The IQP data are reviewed annually by the Undergraduate Outcomes Assessment Committee (UOAC) and shared with the faculty. The MQP results are reviewed only by the faculty in the program. The IQP and MQP faculty mentors are surveyed at the project completion and asked to record the level of achievement for each student for each learning outcome. The response rate to this survey is low (30-35%) because, per the testimony of the director of the teaching center, the mentors are busy and may forget to do it. The results of the IQP and MQP projects are presented in a public forum and judged by faculty and external evaluators; the results of the judging are also used by programs for assessment purposes.

Additionally, sample sets of the projects are reviewed regularly by faculty in the major (MQPs) or by the Global School (IQPs) using the standard rubrics developed for these purposes.

For both the IQP and MQP, students self-report high levels of progress toward achieving all undergraduate learning outcomes. For example, for the last five years, for MQP students, the mean was 3.85-4.44, depending on the outcome. WPI further disaggregates the data by program and tracks it over time, using the gained insights for improvement. For instance, the analysis of student survey results from the 2017-2019 period showed that the lowest average score was for the learning outcome related to understanding and applying ethical standards. The investigation by UOAC suggested that the MQP advisors are not asked to engage students in the ethical concerns that are relevant to their projects, and, anecdotally, some faculty intentionally shy away from discussions of ethics in advising. The 2019-2020 UOAC annual report shows that the committee discussed the

need for a university-level ethics outcomes assessment plan and support for programs in this area. The 2020-2021 UOAC report shows that the committee is still working on this, but the review team could not ascertain the level of progress made toward the creation of such a plan.

The process for assessment of the third graduation requirement, the Humanities and Arts requirement (HUA), is not as developed as for the IQP and MQP. In 2004, the HUA was revised to add the Inquiry Seminar and Practicums as a more structured capstone project experience and to provide a way to assess students learning in this area. Per the self-study, even though WPI has established goals for HUA, it does not have a unified set of SLOs associated with those goals. The institution provided evidence that there are significant efforts being made toward establishing a process for systematic assessment of HUA projects. Specifically, a survey instrument, similar to the one for IQP and MQP, was developed in 2018 but was not universally implemented. It was mentioned in discussion with the faculty that the Department of Humanities and Art is working on building a reflection component into all HUA requirements, also envisioning it as a vehicle for systematic assessment; however, it was unclear when this component will be implemented.

Graduate SLOs Assessment

WPI believes that graduate-level SLOs should be defined at the program level, as these programs focus on deep disciplinary knowledge and do not have the same breadth of purpose as undergraduate programs. Upon review of catalogs, the review team was able to confirm that some graduate programs have well-defined educational outcomes, while outcomes stated for other programs are general and less measurable. Programs use traditional means of evaluating SLOs, such as qualifying and/or comprehensive exam completion, capstone projects, theses or dissertations, graduate seminars, publications, and conference presentations. The institution was able to provide some evidence that graduate programs have used the results of the assessment outcomes for program improvement. For example, the MS in Physics program added additional pathways to complete degree requirements. However, the review team could not confirm that assessment is done systematically and evenly across all graduate programs.

Program-level Assessment

Program-level assessment is conducted regularly for externally accredited programs. For example, School of Engineering departments complete a self-assessment and undergo a rigorous evaluation by visiting teams from the Accreditation Board for Engineering and Technology (ABET) every six years. The most recent review occurred in 2020-21. Per data in E-Series Option 1, Part B, out of ten programs that were reviewed by the Board, two were re-accredited without concerns or additional requests; for others, the accreditors registered a few minor concerns, and, in a couple of cases, requested an updated Continuous Improvement Plan.

The programs in the School of Business are accredited by the Association to Advance Collegiate Schools of Business (AACSB). The most recent visit occurred in 2018, with the next regular visit scheduled for 2023. Two other programs are certified by external

bodies: Biochemistry by the American Society for Biochemistry and Molecular Biology (ASBMB), and Chemistry by the American Chemical Society (ACS). These programs prepare regular reports in accordance with the respective standards to maintain continuous certification.

Per WPI's self-study, programs without an external accreditation or certification are expected to undergo program reviews every four years. The institution provided data that suggests that some programs have recently undergone this process while others have not done so for a long while. For example, the Department of Arts and Humanities engaged in the self-study process in 2016, while the Physics Department last performed this review in 2009. In conversations with staff, we were able to identify that there is no formal schedule for such reviews. The timing of the reviews seems to be based on the availability of the faculty interested in taking on the assignment. The team was not able to confirm that every non-externally accredited program has been reviewed in the period since the last accreditation visit in 2012.

Standard Nine: Integrity, Transparency, and Public Disclosure

Integrity: Throughout our visit, the team was impressed by a commitment to core values across the institution. These values include inclusiveness, communication, teamwork, compassion, and care for one another.

In conversation with various constituencies, the team was impressed by the work of the Sustainable Inclusive Excellence leads and by the depth of the commitment to advancing diversity and equity efforts.

At times, students and employees spoke of the difficulty of translating values to behavior. For example, while students may care deeply for one another's well-being, they are not necessarily equipped or trained to provide meaningful support for their peers struggling with significant issues.

In alignment with a point made earlier in this report, students and faculty told the team about the need to enhance educational offerings relating to ethics and ethical practices in their respective disciplines. The team encourages WPI to consider how to more fully incorporate ethics into the curriculum as an essential component in preparing students for their careers.

Transparency & Public Disclosure: On its public-facing websites, WPI makes available information about itself in ample quantity to inform prospective and current students, faculty, and staff regarding the cost of attendance, academic offerings, and WPI policies. This information is readily findable and presented in ways that are easily understood and digested.

Course catalogs—one for undergraduates and one for graduates—are currently published online as PDFs. The documents are comprehensive, containing descriptions of academic values, policies, procedures, and requirements.

Institutional Research publishes a limited number of dashboards describing student data that include essential information about headcounts, retention rates, and graduation rates. It may be good to develop and publicly share basic headcount data related to faculty and staff.

Summary

Worcester Polytechnic Institute is a distinguished institution, led by a committed Board of Trustees, capable administration, and passionate faculty. It is the opinion of the review team that WPI is achieving its mission and is offering programs that are consistent with the mission.

The hallmark of WPI, as a STEM-based university, is a project-based curriculum. Nearly all facets of the institution, from the unorthodox seven-week terms to the global project centers to the special “making” facilities on campus, are geared toward successful execution of the project-based framework. This distinctive attribute of WPI helps attract very talented students and faculty, and a surprising number of women (for a STEM-based institution).

A thorough, well-prepared self-study was delivered to the visiting team prior to the visit, which enabled the team to learn a great deal about the institution prior to arriving on campus and also served as a reference guide during the visit and preparation of this report.

Major accomplishments during the past decade include continued growth in enrollment and research, the establishment of the School structure and a new faculty tenure track, and completion of numerous new facilities to support the growth and distinctiveness of the institution: Innovation Studio, a Sports and Recreation Center, Gateway II research building, two residence halls, and construction of a sizeable new academic building that is about to come on line.

In spite of these accomplishments, WPI is well aware that time does not stand still and that pressures on higher education are mounting. With this in mind, the review team offers the following summary of important strengths and concerns that we wish to highlight. Some of the concerns already are being addressed by the institution.

Strengths

- WPI offers a truly unique, project-based curriculum with a global focus, which attracts outstanding students and faculty, and a relatively high percentage of women students.
- The institution is student-centered and characterized by a culture of collaboration that fosters a keen sense of community.
- WPI has effective, forward-looking administrative leadership as evidenced by establishment of the Administrative Policy Group, the creation of Schools, a focus on DEI and women in STEM, responsible financial management, and an outstanding response to the pandemic.

- WPI has broadened and better defined its criteria for promotion of faculty on the tenure track. In addition, WPI has pioneered the establishment of a new teaching and research faculty tenure track (TRT), and has implemented long-term contracts and expanded voting rights for nontenure-track faculty.
- WPI has a well-executed strategic plan, and a new, nearly complete strategic plan that was developed through an inclusive process and that is based on a strong set of core values.

Concerns

- WPI has a culture that may sometimes put academic achievement and innovation above the wellbeing of students, faculty, and staff. This is not unique to WPI; it is characteristic of most high-achieving universities. Nevertheless, it is a concern, and one that has been exacerbated by the stress of the pandemic.
- Thoughtful consideration is needed regarding institutional size. Enrollment growth must be supported by increased student services, including those related to wellness, and by adequate space, including space for student work.
- The institution's budget model relies on high net tuition and relatively high institutional debt. While this model has worked well until now, it is in conflict with the newer aspiration that WPI become more accessible and affordable.
- There is need for a more balanced model of governance that formally embraces staff and allows for a stronger voice from students.
- The roles of the Schools and Deans need to be matured and better understood by the WPI community. This is a work in progress because, whereas most universities have long had a school/college structure with deans, this concept is relatively new at WPI.
- It would benefit the institution to have comprehensive internal and external assessment of all academic programs on a regular rolling basis, supported by a robust Institutional Research Office.