

**WORCESTER POLYTECHNIC INSTITUTE**

**November 5, 2020**

**To:** The WPI Faculty  
**From:** Tanja Dominko  
Secretary of the Faculty

The third Faculty meeting of the 2020-2021 academic year will be held on **Thursday, November 5th, 2020 at 3:15 pm via ZOOM.**

1. Call to Order
  - Approval of the Agenda
  - Approval of the Consent Agenda and the Minutes from 10-1-20
2. Secretary of the Faculty Report
3. Committee Business
  - Committee on Governance**
    - a. Motion to expand the tenured and tenure-track faculty to include those who may be designated as “teaching intensive’ when appointed, and to adopt tenure criteria for these positions
    - b. Motion to revise Appendix D in the Faculty Handbook
    - c. Motion to add Guidance for Documenting and Assessing Activities Toward Tenure for Professors designated as teaching intensive
4. New Business
5. Closing Announcements
6. Adjournment

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WORCESTER POLYTECHNIC INSTITUTE  
Faculty Meeting Minutes  
October 1, 2020

**Summary:**

1. Call to Order
  - Approval of Agenda
  - Approval of the Consent Agenda and Minutes from August 27, 2020
2. SoF Report
3. President's Report
4. Provost's Report
5. Committee Business: COG/CITP
6. Committee Reports: COG
7. Other Reports: Presentation from Dean Heinricher
8. New Business
9. Closing Announcements
10. Adjournment

**Detail:**

1. Call to Order

The second Faculty meeting of the 2020-2021 academic year was called to order at 3:15pm via ZOOM by **Prof. Dominko** (BBT). The amended agenda and consent agenda (including the minutes) were approved.

2. Secretary of the Faculty Report

**Secretary of the Faculty Dominko** welcomed everyone to the second Faculty meeting of the 20-21 academic year. She reminded everyone that the meeting was being recorded for the purpose of these minutes.

The goals of Prof. Dominko in her role as the Secretary of the faculty this year include 1) following recommendations of the Task force on non-tenure track faculty to define and implement a tenure-track process for non-tenure track teaching faculty, 2) introducing Administration's proposal for the new Department of Integrative and Global Studies, 3) in collaboration with the President redefine faculty representation on the Board of Trustees, and 4) defining opportunities for professional development as a strategy for internal recruitment of future academic administrators. As a community we will also be working on a plan to best address any concerns that anybody may have regarding social and racial justice.

Prof. Dominko reminded everyone of the importance of participating in the 2020 election. She was certain that, regardless of the election outcome, we will continue doing what we do best at WPI; we will remain a strong community; and we will be there for each other.

3. President's Report

**President Leshin** started by acknowledging the list of priorities that Prof. Dominko outlined and looks forward to working together on these items. She also shared her own list of priorities for this year, which has many similarities. She outlined the following in particular:

- Continuing our strategy for COVID spread prevention, detection and tracing. She recognized all who are contributing to the success so far.
- Working on sustainable inclusive excellence and racial justice. We are purposefully being thoughtful, reflective and taking our time with this to unpack some of the systemic challenges around racial justice and equality on our campus.
- Developing a new strategic plan, including renewing the mission and values in time for NECHE accreditation review in late 2021. Periodic institutional accreditation offers an opportunity for us to be self-reflective and both look back and look forward.
- Another important action is hearing some of the voices of underrepresented marginalized members of our community and hearing about their experiences on campus. This is being done through listening sessions, several of which will be co-hosted by President Leshin. Some of the reports coming from listening sessions will be used as foundational documents.

President Leshin concluded by reminding everyone to vote and asked all to remain supportive of each other in these challenging times.

#### 4. Provost's Report

**Provost Soboyejo** thanked the faculty and the governance leaders for their amazing work to make the term successful thus far. He expressed his appreciation to the faculty, governance leaders, President Leshin, and the CERT team for their coordination. He highlighted several issues:

- The innovation that has been shown by the faculty, highlighting Prof. Teixeira and Prof. Dempski's use of technology as teaching tools, and project advisors using positioning and visualization methods that enable students that are off-site and on-site to get a feel of being in the classroom.
- WPI is at the frontiers of learning on-site and online. We need this kind of leverage as we begin to look beyond the pandemic and think about the future of higher-ed and how we can continue to deliver our own special brand of STEM education.
- The need for continuing committing to social and racial justice.
- Working conditions of our TRT faculty and the teaching path to tenure proposal. He stated that President Leshin, the Board and himself are fully behind the collaborative process. He thanked the Faculty Governance leaders and the leaders of the NTT/TRT Council for the leadership that they have shown. He assured everyone that the Administration is fully committed to work to achieve these goals.
- He thanked everyone for participation in the search process for the Global School Dean. He encouraged everyone to take part in the global school virtual events that are starting October 9<sup>th</sup> and run through the academic year. This first event will include President Leshin explaining the vision of the global school, and a keynote address by Prof. Robert Langer from the MIT.

He encouraged everyone to get involved in strategic discussions that will shape the future of education, research and impact of WPI. As we enter this season of thinking about the strategic plan for the next five years, we will work together to make WPI the very best school in the heart of New England.

#### 5. Committee Business COG/CITP

**Prof. Boudreau** (HUA) presented on behalf of the Committee on Governance (COG).

In March the outgoing members of faculty governance committees were asked to continue through A term until an election can be held. Prof. Shue has developed a Qualtrics survey that will enable us to conduct elections electronically. The new process has been approved by COG and endorsed by the Committee on Information Technology Policy (CITP).

**Prof. Boudreau moved that all remaining Faculty Governance Committee Elections held over from the Spring 2020 be conducted electronically.**

She shared that the concern was about security and making sure that the right people votes, ballots could be counted easily, nobody got left out, and there was no tampering. She requested that Prof. Shue presented this balloting process.

**Prof. Shue** (CS) highlighted the reasons for transitioning to electronic voting and reviewed the timeline. In mid-August COG voted to conduct the elections electronically, which was followed by a vote at the first faculty meeting to do testing and discuss this with the appropriate committees. On September 2<sup>nd</sup>, CITP first discussed this idea and on the 23<sup>rd</sup> of September, CITP voted to endorse the process. This is now being brought to this faculty meeting for a vote. Our elections follow the instant runoff system, which is outlined in bylaw three and explained in Appendix C of the Faculty handbook. The Qualtrics will faithfully replicate the current process. This approach has been developed and analyzed by colleagues at Tufts University. The approach used will be sending a personalized survey link to each person asking them to click on the provided link to complete their ballot. Elections will be anonymous through the Qualtrics feature that eliminates the visible IP addresses. This also ensures that only people who are eligible to vote can cast votes and can only vote once. Prof. Shue mentioned that one potential problem with this is related to finding the email. If it ends up in junk mail, you will need to find it in that folder so that you can cast your vote. Prof. Shue showed an example of what the ballot will look like. He also added that you are not required to rank everyone on the list. After all of the ballots are submitted, there is a tabulation process that involves downloading a spreadsheet that lists the votes. This will be run through the instant runoff voting software, which will determine the winner of the election. If there are multiple positions to be filled on the ballot, the winner will be eliminated, and the results will be run again. The software being used is open source software. On on-campus copy of the source code has been made and will not be changed throughout the election. There is also a video that will be used as a tutorial to those who will be running the elections and tabulating the vote.

**Prof. Fehribach** (MA) asked if there are special procedures in case there is a tie between the two people who obtained the least number of votes. Prof. Shue explained that there are a series of tiebreakers in the code. If there is a tie for the person to be eliminated with the least number one votes, the software then looks at who got the most number two votes and uses this to break the tie. This process continues until it runs out. If it can't eliminate somebody, it uses a coin toss and eliminates one at random.

**This motion passed.**

## 6. Committee Reports

### COG

**Prof Boudreau** (HUA) presented progress that has been made since the implementation of the Task force on the status of NTT faculty in the fall 2019.

Since the completion of the Task force mandate, she has been working with Prof. Heilman, Prof. Richman, Provost Soboyejo, and COG. Since November 2019 faculty meeting, they have worked with various stakeholders and have revised the document a lot as well as changed the criteria. There have been many meetings soliciting input and they have met with the new TRT Faculty Council. Prof. Boudreau explained that they now have a proposal that President Leshin, Provost Soboyejo, and the Board of Trustees are in support of. The TRT Faculty Council has endorsed it, but the proposed motion still needs to be finalized by the COG. They plan on having a meeting with tenure and tenure-track faculty to run the criteria by them and make sure that it is all clear, and then this motion will be brought to the faculty in November 2020 for discussion. After this, revisions will be made, and it will be brought back in December 2020 for a vote.

Prof. Boudreau added that one issue that came out of the task force was the reappointment of professors of practice. She will be looking for faculty members who are interested in joining a working group to come up with a proposal relating to reappointment and to consider the question of whether we can introduce part-time faculty as professors of practice.

Another issue that came out of the task force relates to an implementation plan, provided that this proposal is approved. This will involve Faculty Governance and the TRT faculty representatives working with administration wot come up with an implementation plan. The current goal is to start putting people on this new tenure track in the spring or fall. This is up for discussion, but if it passes in December, it is something to look forward to.

Another issues identified related to full inclusion in Faculty Governance and the concern about both academic freedom and job security. Over the summer, the TRT faculty discussed their concerns over insecure employment with the current contracts. President Leshin and Provost Soboyejo have committed to working with the TRT faculty and Faculty Governance to identify ways that the current contracts and employment conditions of our TRT faculty can include academic freedom.

Prof. Boudreau summarized that they are working to come up with a system that will allow the faculty to feel secure and will allow the administration to see that all full-time faculty are fully included. Prof. Boudreau pointed out that it has not been right that the full-time non-tenure track faculty have not been included despite the improvements made in the last 10-12 years. She provided a brief recap on what the faculty positions looked like before these improvements and also mentioned that Penn State just made similar improvements, which earned them the Delphi Award. This is an award for the institution that does the most to support and advance the careers of non-tenure track faculty. Despite this success, the lack of participation has still been an issue and something needs to be done about it. Prof. Boudreau said that they are looking forward to working with President Leshin and Provost Soboyejo on securing employment through contracts that are much more secure than they have been in the past. They are also working on

enfranchising all full-time faculty and opening up participation in Faculty Governance, so that we can be one unified faculty.

**Provost Soboyejo** mentioned that the Board, President Leshin and himself are fully in support of this process. They are also working on the administrative detail and budgeting to ensure that this gets built into our strategy going forward. He also thanked Faculty Governance for working with the TRT faculty leaders and added that he is hopeful that we can meet the goals of the agenda that has been set forth in this presentation.

Prof. Boudreau thanked Provost Soboyejo and President Leshin for agreeing to this. She added that this is a big project because it is happening at a time when so many schools are cutting back and so many people are being laid off. WPI has not lost a single employee to COVID layoffs, which is something that we can all be proud of. She also commended the TRT faculty for talking about the contracts, since it was a very brave and important step. Prof. Boudreau said that if we can collaborate on something like this in this time when so many schools and so many faculty are falling apart; it will be a huge win for everyone at WPI.

## 7. Other Reports

### Dean of Undergraduate Studies

**Dean Heinricher** introduced accreditation purpose. The New England Commission of Higher Education (NECHE) provides the accreditation for everything WPI does. This includes our programs at all levels and modes. It is a ten-year review which contains two parts. The first part is our institutional self-study guided by the nine standards and requests from the commission from our last visit. There is a nine-month gestation period on this document. In October of 2021, there will be a visit by an external review committee with representation from peer institutions across New England.

NECHE is about standards in mission. There is a difference between this and ABET or AACSB; it is not prescriptive. MIT is subject to these standards and so is the Mass College of Art and Design. So, from the largest research institution to the smallest teaching only college in New England, they go through the same standards. Everything is interpreted in terms of the mission.

Dean Heinricher explained that accreditation serves two goals. One is a statement of our higher education community about why we deserve the public's trust and the other is a framework for institutional development and self-evaluation. This is not a checklist where we have to demonstrate that we have met all the required boxes, but rather a statement about areas where we are doing very well and those where we want to improve. He explained that a good visit is when they come back to you and identify all the things you want to work on, which basically agrees with everything that you said you want to do.

Dean Heinricher then emphasized that the nine standards touch everything we do from our statement of mission and purpose to how we do strategic planning to how the trustees work with President Leshin and the faculty. It also affects details of academic programs, how students get to campus, and many more aspects of WPI. Some things that the standards specifically mention are if the relationships among the governing board, administration, faculty, and staff are clearly described in the bylaws, the availability of student services, and the number of faculty and staff.

Some of the things we have been asked to look at in the past are the impact of enrollment growth on faculty workload and advising; and the impact of enrollment growth on student services. There are currently communications going on the Canvas site to collect stories from the community that will be in the same place where we share data and drafts. Dean Heinricher then invited Prof. Spanagel to say a few words.

**Prof. Spanagel** (HUA) explained that he is going to supplement and contextualize all the data that is entered into the accreditation. He pointed out that Standard 6, the one on teaching, learning and scholarship, is one that all of our faculty colleagues have something to say about. These stories are needed in order to supplement and explain the record of what has happened at our institution over the past decade. Prof. Spanagel encouraged everyone to think back to the past ten years about stories of achievement or a frustration that you can share. Both of these are important and should be included in this narrative.

He highlighted some of the 20 sub-standards in Standard 6.

Standard 6.2 was mentioned previously, but it is the number of faculty and academic staff over the past decade. Through all the enrollment growth, what has been your experience in your memory of the responsiveness of the college to be able to provide enough instructional resources and support at each stage of that process?

Standard 6.6: salaries and benefit levels for faculty. He mentioned that everyone probably has something to say about these issues. We would like to be able to not only present numbers, but also experience what it has been like.

Standard 6.7 talks about faculty assignments and workloads. How have you been maintaining the balance among and managing the cumulative burden of instruction, advising, program development, professional development for yourself, research, and creative scholarship plus your service responsibilities? We want to tell stories about how faculty have been supported in doing these things during their time at WPI.

Standard 6.12 talks about academic freedom being ensured for all faculty. What does that look like regardless of your status and term of employment?

Dean Heinricher thanked Prof. Spanagel. He then mentioned that there is a lot of work to be done. The self-study report that we write is 100 pages. There is a lot of data that is included, but we need to find space to tell our story inside those limits. Over the next nine months, we will strive to continue to increase community engagement. The visiting team will look if the community was really involved in the self-study process since they want it to be real community engagement. He explained that we will strive to do that through open virtual meetings through the Canvas site.

There are three questions and a simple survey on the Canvas site. These reflect on how WPI has changed, what makes WPI special, and how that will look 10 years from now. There are 20 members of the engagement team, whose names were displayed in the presentation. All of these faculty members can talk to you about the process and can help you get engaged.

Dean Heinricher concluded by emphasizing that these people may be reaching out for help and he asked that everyone say yes.

8. New Business

None.

9. Closing Announcements

**Prof. Servatius** (MA) recommended that we get rid of Workday.

10. Adjournment

Meeting was adjourned at 4:43pm by **Prof. Dominko**.

Respectfully submitted,  
Tanja Dominko  
Secretary of the Faculty

## CONSENT AGENDA MOTIONS

**CGSR** Change MTE 594 to MTE 530

**CGSR** Remove Materials Process Engineering description

**CGSR** Add NEU 510 Neuroscience Seminar; NEU 590 Special Topics in Neuroscience; NEU 596 Independent Study in Neuroscience; NEU 597 Directed Research in Neuroscience; NEU 598 Graduate Internship in Neuroscience; NEU 599

**CAO** Replace OIE 4420 *Practical Optimization* with OIE 4430 *Advanced Prescriptive Analytics: From Data to Impact*

**Date:** November 5, 2020

**To:** WPI Faculty

**From:** Committee on Graduate Studies and Research (Prof. Marsha Rolle, Chair)

**Re:** Motion to change course No. from MTE 594 to a permanent No. of MTE 530 for  
*Computational Thermodynamics*

**Motion:** The Committee on Graduate Studies and Research recommends, and I move, that following catalog changes for the course description of MTE 530: Computational Thermodynamics (experimental course as MTE 594 since 2018) be approved.

**Proposed Course Description:**

**MTE 530: Computational Thermodynamics, (Term-based Course, Credits: 2)**

The objective of this course is to introduce the basic principles of computational thermodynamics (CALPHAD). Students will be exposed to the basic thermodynamic simulation in single-component, binary, ternary, and higher-order systems for various alloys and ceramics systems. The course will emphasize the linkage of computational thermodynamics with the real industry challenges faced in the next-generation materials design. In addition, the fundamental concepts of multiscale modeling, including the atomic scale, mesoscale and macroscale modeling, will also be introduced to students.

Recommended Background: A graduate major in engineering or science is recommended, but not required. It is preferred that students have taken MTE526/ME5326 Advanced Thermodynamics or equivalent courses.

**Expected enrollment:** 15-30 students

**Intended audience:** Graduate students in ME, MTE, MFE, AE, CHE, CBC, CEE, FPE, and PH

**Anticipated Instructor:** Prof. Yu Zhong

**Rationale:** Computational Thermodynamics (CALPHAD) is the method extensively used for materials discovery and deployment. It performs thermodynamic modeling for multicomponent systems and establishes databases to support other computational modelings on process-structure-property relationships. Therefore, it has been considered a fundamental methodology in *Materials Genome Initiative (MGI)* that the white house announced several years ago. In materials science and engineering, the CALPHAD method has been successfully coupled with other types of methods to perform fundamental research. For example, the quantum mechanical calculations often predict the ground state energies to the CALPHAD approach, and thus can accurately extend the model-prediction to high-temperature. The CALPHAD model-prediction of thermodynamics can further support the phase-field simulation to predict the microstructure evolution of multicomponent systems and thus explore fundamental mechanisms of phase transformations. The CALPHAD method itself has been successfully applied as a high-throughput method to perform composition screening of new alloys, such as high-entropy alloys.

There is currently no existing course in the WPI curriculum specifically focusing on computational thermodynamics, although faculty members in ME, MTE, MFE, AE, CHE, CBC, CEE, FPE, and

PH have research interests that directly or indirectly involve computational thermodynamics. This proposed advanced course connects many topics in emerging areas of research, and is therefore appropriate for the graduate level. Students in ME, MTE, MFE, AE, CHE, CBC, CEE, FPE, and PH will potentially be interested in such an offering. This course can help students to find positions in industry that require knowledge related to the design of next-generation materials.

This course has been offered three times by Prof. Yu Zhong (in C-18, C-19, and C-20) as a 2-credit Special Topics course (MTE 594 Special Topics: Computational Thermodynamics) with in-person sections. The enrollment and evaluations of this course for these offerings are shown below:

Year/ Term	Course Number	Course Name	Enrol.	Eval Q1	Eval Q2	Resp.
20/C	MTE 594	Special Topics: Computational Thermodynamics	15	4.4	4.2	9
19/C	MTE 594	Special Topics: Computational Thermodynamics	17	4.7	4.7	17
18/C	MTE 594	Special Topics: Computational Thermodynamics	8	5	4.9	8

The course has been approved by the faculty of the MTE program.

**Impact on Degree Requirements:**

This course is not a required course for any degree. However, it will help students satisfy degree requirements for taking course credits in the ME and MTE/MFE graduate programs.

**Resources and Anticipated Instructors:**

This course is included in the regular teaching load of Prof. Yu Zhong. A regular classroom capable of holding 15-30 students with a computer and projector is required. The new classroom in Foisie Innovation Studio is preferred.

**Implementation Date:**

Implementation date for this action is the 2021-2022 academic year.

**Date:** November 5, 2020

**To:** WPI Faculty

**From:** Committee on Graduate Studies and Research (Prof. Marsha Rolle, Chair)

**Re:** Motion to remove Materials Process Engineering description from Graduate Catalog

**Motion:** The Committee on Graduate Studies and Research recommends and I move that the description of Materials Process Engineering be removed from the Graduate Catalog.

**Proposed Modifications to Graduate Catalog for 2021-22 AY:**

Remove the Materials Process Engineering (MPE) description from the Grad Catalog.

**Rationale:** The description of MPE is redundant and is completely overlapping with the description of Materials Science & Engineering (MTE). The courses offered through MTE program are the same that are listed for MPE. MPE degree is generally opted by only a few (2-3 every year) CPE students for MS. The students can get a MS in MTE which is a common degree from all Materials Science & Engineering Programs. Our course offerings in MTE are flexible enough to allow many desired combinations focused on processing.

**Please note:** *With the introduction of full online MS degree in Materials Science & Engineering through CPE, beginning Spring 2021, the MPE degree will not be required as a separate option. Students who are currently enrolled in MPE MS Program will be able to complete their degrees as such.*

**2 students enrolled in 2020-21 AY have been advised to change their degree option to MS in MTE.**

**Impact on Degree Requirements:** No impact. The degree will state MS in Materials Science & Engineering.

**Implementation Date:** Implementation date for this action is the 2021-2022 academic year. Materials Science & Engineering Program had decided on this removal in early 2020, but a formal request for removal from catalog was not made. The revision was made for the new catalog and MPE Program does not appear in the new catalog. I apologize that the removal request was not formally made sooner.

**Date:** November 5, 2020

**To:** WPI Faculty

**From:** Committee on Graduate Studies and Research (Prof. Marsha Rolle, Chair)

**Re:** Motion to add new graduate courses for the M.S. program in Neuroscience, “NEU 510 Neuroscience Seminar; NEU 590 Special Topics in Neuroscience; NEU 596 Independent Study in Neuroscience; NEU 597 Directed Research in Neuroscience; NEU 598 Graduate Internship in Neuroscience; NEU 599 M.S. Thesis Research in Neuroscience”.

**Motion:** The Committee on Graduate Studies and Research recommends, and I move that the following new courses for the M.S. program in Neuroscience be added as described below.

**Proposed Course/Catalog Description or proposed Modifications to Graduate Catalog:  
All courses are 3 credits unless otherwise noted.**

**NEU 510 Neuroscience Seminar (0 credits; pass/fail grading)**

Course Description: This seminar provides an opportunity for students in the Neuroscience program to present their research work, as well as hear research presentations and talks from guest speakers.

**NEU 590 Special Topics in Neuroscience (3 credits)**

Course Description: This course is intended to provide the students of the program a diverse selection of current relevant topics in neuroscience. Prerequisites will vary with topic.

**NEU 596 Independent Study in Neuroscience (3 credits)**

Course description: This course will allow a student to study a chosen topic in Neuroscience under the guidance of a faculty member affiliated with the Neuroscience Masters program. The student must produce a written report at the conclusion of the independent study.

**NEU 597 Directed Research in Neuroscience (3 credits)**

Course description: Directed research conducted under the guidance of a faculty member affiliated with the Neuroscience Program.

**NEU 598 Graduate Internship in Neuroscience (3 credits)**

Course Description: Graduate internship is carried out in cooperation with a sponsor or industrial partner. It must be overseen by a faculty member affiliated with the Neuroscience Program. The internship will involve development and practice of technical and professional skills and knowledge relevant to different areas of Neuroscience. At the completion of the internship, the student will produce a written report, and will present their work to core and affiliated Neuroscience faculty and internship sponsors.

**NEU 599 M.S. Thesis Research in Neuroscience (3 credits)**

**Course Description:** A Master’s thesis in Neuroscience consists of a research and development project worth a minimum of 9 graduate credit hours advised by a faculty member affiliated with the Neuroscience Program. A thesis proposal must be approved by the Neuroscience Program Review Board and the student’s advisor before the student can register for more than three thesis

credits. The student must satisfactorily complete a written thesis document and present the results to the Neuroscience faculty in a public presentation.

We anticipate an initial enrollment of 5 graduate students in the first year. We expect to increase enrollment annually as the program ramps up, with a projected 25 students by AY 2024-2025.

**Rationale:** The addition of the above said courses adds more depth to the graduate Neuroscience program. These courses allow students to build on a strong foundation in molecular, psychological, computational, quantitative and learn more about the interdisciplinary approaches to neuroscience. We are emulating courses offered by other successful graduate programs being currently offered at WPI namely, Data Science (DS) and Bioinformatics and Computational Biology (BCB).

**Impact on Degree Requirements:** This motion will have a positive impact on the master's Program in Neuroscience and help train students in diverse areas of Neuroscience.

**Resources and Anticipated Instructors:** No additional resources are requested.

**Implementation Date:** Implementation date for this action is the 2021-2022 academic year.

**Date:** November 5, 2020

**To:** WPI Faculty

**From:** Committee on Academic Operations (Prof. Paul Mathisen, Chair)

**Re:** Motion to add OIE 4430 *Advanced Prescriptive Analytics: From Data to Impact* to the Undergraduate Catalog as a permanent course offering and drop OIE 4420 *Practical Optimization*, approved by the Foisie Business School on 10/07/2020 and CAO on 10/16/2020.

**Motion:** The Committee on Academic Operation recommends, and I move, that a new permanent course OIE 4430 *Advanced Prescriptive Analytics: From Data to Impact* be added to the undergraduate catalog to replace OIE 4420 *Practical Optimization*.

**Proposed course title, description, and offering:**

OIE 4430 *Advanced Prescriptive Analytics: From Data to Impact* – Cat. I

This course provides an in-depth focus on prescriptive analytics, which involves the use of data, assumptions, and mathematical modeling of real-world decision problems to ascertain and recommend optimal courses of action. Starting from conceptualization of the problem, to using theory for translational modeling and techniques, to computational solving, and finally interpretation – likely in an iterative manner – students will gain knowledge of tools and practical skills in transforming real-world decision problems into actionable insights. Advanced topics in the prescriptive analytics domain will be covered, such as the use of integer variables to represent important logical constructs, using nonlinear functions to represent real-world decision aspects, the incorporation of stochasticity and uncertainty, and corresponding solution methods. Real-world problems will be selected from a variety of contexts that may include capacity management, data science, finance, healthcare, humanitarian operations, inventory management, production planning, routing, staffing, and supply chain.

**Recommended Background:** An introductory level of exposure to prescriptive analytics or linear optimization, such as can be found in OIE 2081, MA 2210, or MA 3231.

**Suggested Background:** Note the mathematical foundations of some of the optimization techniques in this class are in MA 3231. Students might also benefit from MA 3233.

**Note:** Students cannot take both OIE 4420 and OIE 4430 for credit.

**Former course title, description, and offering:**

OIE 4420 *Practical Optimization: Methods and Applications* – Cat. I

This course covers the use of practical computational methods to solve constrained optimization problems from industry. Optimization theory and algorithms related to linear and integer programming will be discussed, with primary emphasis placed upon computationally solving applications in the industrial, operational, manufacturing, and service sectors. Both proprietary and open-source optimization software will be used, including spreadsheet solvers (e.g., Excel Solver, OpenSolver), industrial-strength optimization packages (e.g., CPLEX, GUROBI), and other interfaces (e.g., AMPL, OPL, GMPL). Students will be expected to model problems and interpret their results; where applicable, sensitivity analysis, duality and additional techniques will be utilized to gain managerial insight from developed models and solutions. Cases from industries such as health care, supply chain management, financial services and analytics will be used for illustrations, discussions, and exercises. Recommended background: Familiarity with some basic linear programming (BUS 2080, MA 2210, MA 3231, or equivalent).

**Explanation of Motion:** This motion will add a new course to the Industrial Engineering (IE) undergraduate curriculum. The Foisie Business School (FBS) has recently embraced analytics and this advanced undergraduate course would be a strong option for both our FBS undergraduate students, as well as for undergraduate students campus-wide. We are removing an outdated version of this course, OIE 4420 *Practical Optimization*.

**Rationale:** This motion continues the restructuring of the more analytics-related courses in the IE undergraduate curriculum. The recent creation of OIE 2081 *Introduction to Prescriptive Analytics* (offered for the first time in 2020-2021), has provided a solid home to the standard concepts of applied linear optimization that are seen in analytical problems faced in industrial engineering such as production planning, scheduling, and resource allocation. These and related concepts were previously covered in the IE curriculum through OIE 4420; with their coverage now in OIE 2081, there is an opportunity to expand our curriculum to include more advanced prescriptive analytics concepts such as the use of advanced mathematical modeling in the form of binary integer variables to represent key logical constructs, nonlinear functions to represent real-world decision aspects, and also the incorporation of stochasticity and uncertainty. Hence, the creation of OIE 4430 *Advanced Prescriptive Analytics* enables earlier content in OIE 4420 to be augmented with additional content such as nonlinearities and uncertainty – key aspects of using advanced prescriptive analytics to more accurately model real-world problems and ultimately, make better decisions.

**Impacts on Students:** OIE 4430 *Advanced Prescriptive Analytics* will replace OIE 4420 *Practical Optimization* in the IE undergraduate core distribution requirements; OIE 4420 presently appears in the IE core as an “either-or” option with OIE 3405 *Work Systems and Facilities Planning*; it is intended that OIE 4430 will replace OIE 4420 in this construct, so that students will still have the “either-or” option. Moreover, OIE 4430 would directly replace OIE 4420 in the Business, Management Engineering and Data Science undergraduate majors, as well as the IE and Data Science minors.

**Resource Needs:**

- **Instructor** – Prof. Andy Trapp, who is currently teaching OIE 4420 which we are dropping, will deliver the course.
- **Classroom** – Classroom large enough to hold 50 students, including a lectern with standard power and projector connections.
- **Library resources** – No additional needs for library resources.
- **Information Technology** – No special support or equipment is needed from ATC.

**Implementation Date:** The implementation date is the 2021-2022 academic year.

## COMMITTEE BUSINESS

**Date:** November 5, 2020

**To:** WPI Faculty

**From:** Committee on Governance (Prof. Boudreau, Chair)

**Re:** Motion to expand the tenured and tenure-track faculty to include those who may be designated as “teaching intensive” when appointed, and to adopt tenure criteria for these positions. – FOR DISCUSSION ONLY

**Motion:** The Committee on Governance recommends and I move that the composition of the tenured and tenure-track faculty at WPI be expanded to include Assistant, Associate, and Full Professors who may be designated as “teaching intensive” when appointed, and that tenure criteria for these positions be added to Section Two, Part 1.A of the Faculty Handbook, as described below.

### **Description of the Motion:**

The motion expands the type of tenured and tenure-track Assistant, Associate, and Full Professors at WPI to include those who may be designated as “teaching-intensive” when appointed. The motion also establishes tenure criteria for teaching intensive tenure-track professors of all ranks to be added to Section Two, Part 1.A of the Faculty Handbook. The proposed tenure criteria are as follows:

### **Proposed Tenure Criteria for Teaching Intensive Professors:**

Assistant, Associate, and Full Professors at all ranks designated as teaching intensive are expected primarily to contribute to the *teaching mission*<sup>1</sup> of WPI. Therefore the tenure criteria for these faculty members are focused on the quality of their teaching, their broader contributions to WPI’s overall teaching mission, and their demonstration of and potential for continuing professional growth and currency, especially when it clearly enhances the effectiveness of the candidate’s teaching and/or furthers a general understanding of effective teaching practices. Consideration is also given to each candidate’s level of active engagement with and service to WPI and/or the broader professional communities. The candidate’s activities should demonstrate the capacity for continued excellent performance.

Teaching-intensive Professors are expected to contribute in three categories: teaching practice; continuing professional growth and currency; and service. These categories are described below.

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<sup>1</sup> *The WPI teaching mission is distinguished by inquiry-based learning, open-ended problem solving, and integrative and interdisciplinary thinking. A WPI education balances personal responsibility with cooperation, collaboration, and mutual respect, and encourages critical reflection, sound decision making, and personal growth. WPI prepares its graduate broadly to lead fulfilling lives as responsible professionals, informed community members, and ethical citizens.*

Teaching Practice: Excellent undergraduate and/or graduate teaching - whether it is delivered in the classroom, through project advising, or via online or blended courses - is a necessary but not sufficient requirement for obtaining tenure as a teaching-intensive Professor at WPI. Teaching: is excellent when it is of *high quality* and has *significant impact* on WPI students and curriculum. In any teaching setting, faculty members must communicate in compelling ways that demonstrably enhance the educational growth of their students. Effective teachers develop students as creative thinkers, life-long learners, and effective communicators able to use evidence with logic, clarity, and persuasion. Effective teachers draw on many skills to support student learning that may include but are not limited to the following (as needed):

- Expertise in and enthusiasm for the subjects taught and projects advised;
- Clear and effective communication of concepts and material taught;
- Awareness of the strengths, weaknesses, and educational needs of their students;
- Development of general strategies for the successful educational advancement of all students;
- Ability to make suitable adjustments to content, organization, and pacing of course and project work to support student learning and engagement;
- Development of inclusive strategies that ensure the success of a more diverse student population;
- Devotion to personalized professional mentorship of students and/or advisees, including as Insight and academic advisors.

Continuing Professional Growth and Currency: Continuing professional growth and currency is a necessary but not sufficient requirement for obtaining tenure as a teaching-intensive Professor at WPI. Teaching-intensive Professors are *committed* to meaningful professional growth and currency that has significant *impact* on teaching and learning networks and support systems, on approaches to and understanding of teaching and learning, and/or on one's own scholarly discipline and/or scholarly communities.

Teaching-intensive Professors seek opportunities for ongoing professional growth and currency, especially in ways that inform their own teaching experiments and innovations and disseminate this knowledge to others within and outside of WPI. Professional growth and currency for these purposes takes on many forms that may include but are not limited to the following (as appropriate):

- Assessing and improving courses, projects, curricula, and pedagogy, and sharing their own pedagogical and scholarly discoveries as these emerge;
- Questioning existing teaching boundaries and experimenting with ideas that overcome the constraints of current teaching practice;
- Remaining active as scholars through the scholarship of discovery, teaching and learning, integration, application and practice, or engagement;
- Continuing to learn about developments in the field of education to enhance their practice of teaching and educating others of their innovations within and/or outside of WPI;
- Remaining current in their disciplines and incorporating recent developments in the field into their course teaching and project advising;
- Understanding student learning and developing creative new approaches to teaching when needed to improve student learning;

Service: Service is a necessary but not sufficient requirement for obtaining tenure at WPI. The institution flourishes when faculty are fully engaged not only in their classrooms and project advising but also in the lives of the institution, the local community, and professional organizations. Effective faculty members exploit opportunities to contribute to these various communities.

**Statement of Support**  
**Teaching and Research Track (TRT) Faculty**  
**October 5, 2020**

We, the Teaching and Research Track (TRT) Faculty, wish to express our strong support of the proposed draft for *Tenure Criteria for Professors of Teaching* dated September 25, 2020, and the *Guidance for Documenting and Assessing Activities Toward Tenure*, dated September 16, 2020. We believe these drafts describe a clear, rigorous, and achievable path towards tenure that maintains the current high standards we have set for ourselves and inspires us to do our best work for our students, the institution, and our fields of study. Implementation of this tenure track will show that WPI values our work and expects us to continue to contribute to the institution's mission, now as equal members of the faculty and with the security of academic freedom that tenure confers.

The teaching path to tenure addresses academic freedom and full inclusion in faculty governance for a subset of TRTs. For those TRTs not participating in the teaching path to tenure (because they are not offered or do not choose this path) we believe that secure, longer-term contracts offer the protections needed to achieve a suitable level of academic freedom necessary to vote openly and honestly. Should the teaching path to tenure be established, it will then be critical for the administration to deliver these secure contracts expeditiously. In turn, we expect faculty governance will move swiftly to define all full-time TRTs as Faculty, with the enfranchisement and privileges the status as Faculty guarantees.

We urge you to support the *Tenure Criteria for Professors of Teaching* and the *Guidance for Documenting and Assessing Activities Toward Tenure*. WPI is on the cusp of eliminating the current two-tiered system that relegates TRT's to second-class status and pioneering a way for full representation and participation of all members of the faculty.

Sincerely,

TRT Faculty Council (on behalf of the vote of the TRT Faculty)  
Althea Danielski (HUA)  
Destin Heilman (CBC)  
Ryan Madan (HUA)  
Rebecca Moody (HUA)  
Geoff Pfeifer (GS)  
Zoe Reidinger (BME)  
Lou Roberts (BBT)  
Lisa Stoddard (SSPS)

## **Rationale:**

The teaching path to tenure we describe here acknowledges the central role that teaching faculty currently play in our academic mission, and - through the proposed tenure criteria - offer definitions of teaching and professional excellence. These definitions reflect best practices at WPI and elsewhere, they identify clearer and more explicit standards for teaching excellence than are available in WPI's current tenure criteria, and they specify the broad range of activities appropriate to the professional growth of our teaching faculty.

### **1. Rationale for expanding the composition of the tenured and tenure track ranks to include teaching intensive Assistant, Associate, and Full Professors:**

There are three primary rationales:

*WPI's Institutional Values:* Since its founding and now as much as ever, WPI prides itself on its primary mission of educating students. These values drove the bold educational innovations that WPI introduced in 1970. Today, a tenure track to teaching is not only consistent with these stated values, it will also strengthen us as WPI continues to improve, expand, and develop new programs by relying heavily on the efforts of our innovative teaching faculty. Given their vast and important contributions, without which we could deliver neither our core nor our signature academic programs, our teaching faculty deserve equitable treatment relative to their traditional tenured and tenure-track faculty colleagues.

*Institutional Commitment:* WPI has invested increasingly in promoting excellence in teaching and learning and supporting instructional effectiveness, student learning, and innovation in the curriculum and teaching practice. Faculty hired to teaching-intensive positions have also invested heavily in the institution, developing themselves professionally, joining experimental teaching and advising teams, and contributing greatly to excellence in teaching and advising at all levels, including major courses and MQPs, general education courses including GPS, HUA, and IQP, and academic advising. Most have devoted as much time and professional care to their development as teachers as they would if they were on a tenure track. Given the central role played by our teaching faculty in delivering on our educational mission, WPI should match the individual commitments made by our long-term teaching faculty with a reciprocal institutional commitment to them.

*Academic Freedom:* Academic freedom at a university is the bedrock of the pursuit of truth and knowledge, of the freedom to be creative, experiment, and take risks, and of the latitude to participate critically in open debate. And tenure is the bedrock of academic freedom. Academic freedom applies not only to research, but also to teaching and to all other activities expected of university professors, and therefore it should be extended to our teaching faculty. Tenure for teaching is particularly critical now, when more than half of our academic credits are delivered by our teaching faculty and as WPI seeks to advance its reputation as a leader in the art, science, and practice of college teaching - encouraging continual growth in teaching effectiveness and enhancement of student learning, developing learning innovations, and fostering our culture of student learning assessment to guide improvements in teaching practice and curricular change. These goals can only be achieved by a faculty free to take risks in their classrooms, in their project advising, and as they experiment with new forms of educational deliveries.

Tenure also protects faculty members who take part in the shared governance of WPI, enabling them to freely and fully participate on committees and in institutional discussions, deliberations, and debates over policies, programs, and strategic plans in their departments and campus wide. For these reasons, paths to tenure for teaching faculty should be provided to and are just as important for those teaching faculty who, in the judgment of their peers, accept all these responsibilities.

There are five clear benefits:

*Institutional visibility and reputation:* By adopting a teaching path to tenure, WPI will burnish its reputation as a leader and innovator in higher education —this time, by addressing an obdurate problem in higher education that other institutions have not yet solved. By solving the problem in our own context, we will publicly demonstrate the value WPI places on teaching and learning as we proudly invest in the innovative and outstanding instruction that has made WPI successful. By meeting rigorous standards for effective teaching practice, innovative teaching contributions, and active professional growth, our teaching faculty will engage in activities that will bring external recognition to the institution.

*Professionalization of the teaching faculty:* A path to tenure will grant teaching faculty the professional identity and professional esteem they currently lack. This identity comes not only from job security, but also from the recognition of tenured colleagues within and beyond WPI. It develops when an individual is held to shared and respected standards of practice (including ambitious and transparent criteria for hiring, tenure, and promotion), undergoes reputable peer evaluations, has access to institutional support for professional growth, and assumes greater intellectual independence than is possible in relative isolation off the tenure track.

*Recruitment and retention of excellent teaching faculty:* A tenure path for our excellent teaching faculty will dramatically improve their work conditions, enhance their professional status, and increase their investment in the University. These factors, in turn, will increase our chances of retaining the very best of them and will increase their productivity and job satisfaction while they are here. By conducting national searches for new tenure-track teaching faculty in a landscape in which most other institutions can offer only non-tenure track positions, we will be able to recruit the best from among the growing national pool of qualified individuals whose strengths align with the mission of educating our students.

*Unity of the faculty:* A curriculum and campus culture like WPI's, requiring collaboration in teaching, project advising, research, and governance, functions at greater strength with a unified faculty. By expanding the tenure ranks to our many outstanding teaching faculty, we strengthen all the functions of the faculty, unify our practices, policies, and procedures regarding hiring, evaluation, tenure, and promotion, and reaffirm our commitment to education with the acknowledgement that faculty members are equal partners, regardless of their different roles.

*Inclusion and Equity:* Broader inclusion of teaching faculty will ensure that the experiences, identities, beliefs, and diverse backgrounds of these faculty enhance the perspectives that

contribute to positive change on campus, enabling them to feel equally valued and supported in WPI's future success. Tenure and the enhanced professional identity it carries will support WPI's strategic commitments to diversity and inclusion and to faculty development.<sup>2</sup> Tenure tracks for teaching will strengthen WPI's efforts to attract and retain excellent faculty who will contribute in diverse ways to WPI's unusual teaching mission.

***2. Rationale for the proposed tenure criteria for Assistant, Associate, and Full Professors designated as teaching intensive:***

Just as the expectations we have of our teaching professors are distinct from expectations for traditional tenure-track faculty, so too should tenure criteria reflect these differences. Accordingly, the proposed tenure criteria for teaching intensive professors refer to teaching and emphasize professional growth as it is related to teaching. These criteria are meant to be *realistic*—that is, based on current teaching-related expectations for teaching faculty with heavier teaching loads, rather than on unfair new expectations. The criteria are also *rigorous*, reflecting clearer and more exacting standards for teaching excellence in practice and in professional growth. (Guidance for documentation of the tenure candidate's activities toward tenure is included in a separate motion and includes a variety of ways to demonstrate and judge the extent to which those standards are met.) Finally, these standards are *aspirational*, driving teaching faculty to reach higher than they might have done without the expectation and support of an ongoing peer-review process and a community of peers.

Rather than creating a new and very different job description, the teaching path to tenure we describe here acknowledges the central role that teaching faculty currently play in our academic mission. The proposed criteria take scholarly activities into account in a substantive way, but include a broader array of activities that are appropriate for the professional growth of our teaching faculty. This position is consistent with WPI's values as an institution that excels at creating and instilling knowledge and that holds high standards for excellence and innovation in both research and teaching.

**Institutional Goals Concerning the Balance of Faculty Composition:**

***General Principles:***

Goals concerning the make-up, composition, and balance of the WPI faculty should be set collaboratively between the President, the Provost, the Deans, the Department Heads, and the faculty through its Faculty Governance representatives and its TRT Council representatives. The goals should be based on WPI's teaching and research mission, the University's priorities and aspirations, and its institutional resources and strategy.

These goals should be revisited periodically through campus-wide discussions that either affirm the soundness of the prevailing goals or develop an understanding and a consensus concerning the reasons and the ways they need to shift.

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<sup>2</sup> Elevate Impact, 14-15.

Specifically, the goals could apply broadly to two ratios.

- The first ratio would approximate the desired and intended balance between traditional (non-teaching intensive) tenured tenure-track faculty and the teaching faculty (consisting of teaching intensive tenured-and tenure track faculty, TRT Teaching Professors, Professors of Practice, Instructors and Lecturers).
- 
- The second ratio would approximate the desired and intended balance between the teaching intensive TTT teaching faculty and the remaining teaching faculty (consisting of TRT Teaching Professors, Professors of Practice, Instructors and Lecturers).

#### Proposed Five-Year Goals:

In fall 2019, for example, there were 264 TTT faculty members at WPI and 120 full time teaching faculty members. WPI's current goal is to increase the number of traditional TTT faculty to approximately 300 within the next four years. The current faculty make-up embodies today's healthy balance required to carry out WPI's combined teaching and research mission, while the proposed expansion of the traditional TTT faculty is consistent with our goal to further enhance the impact of our research.

Consequently, with respect to the first ratio, a sound five-year working institutional goal consistent with our current state and direction is to maintain a full-time faculty that is made up of approximately **70 percent** (300/420) non-teaching intensive traditional tenured and tenure-track faculty and **30 percent** (120/420) teaching faculty (consisting of teaching intensive tenured-and tenure track faculty, TRT teaching professors, Professors of Practice, Instructors and Lecturers).

With respect to the second ratio, we have had several discussions between the faculty and the administration about the number of teaching intensive tenure lines that could be opened over a five-year period. In addition, and the TRT Council, based on their knowledge of our current teaching professors, has provided a preliminary estimate of the number of those faculty members who would be both interested in and see themselves as qualified for placement on a teaching intensive tenure-track as described by the proposed criteria. Based on this information, a reasonable working five-year goal consistent with administration, TTT faculty, and TRT faculty input is to maintain a full-time teaching faculty that is made up of approximately **50 percent** teaching intensive tenured and tenure track faculty and **50 percent** teaching faculty consisting of TRT teaching professors, Professors of Practice, Instructors and Lecturers.

#### Implementation:

Any implementation plan should be consistent with our five-year institutional goals (proposed above) and should ensure that the institution is served well, that our tenure process remains rigorous, and that our teaching faculty are treated fairly.

#### General Implementation Principles:

- Decisions about *the number* of teaching intensive tenure-track lines to be opened each year will be made by the Provost with substantial input from the Deans, Department Heads, Department Tenure Committees based on a thorough assessment of the their current teaching faculty, and from the TRT Council based on their knowledge of their own

constituency, and monitored by the Provost's office and faculty governance for overall for consistency with institutional goals.

- Decisions about *who will be placed on available tenure lines* will be made collaboratively by Department Heads, DTCs, Academic Deans, Provost, and the individual TRT faculty members themselves. These considerations will include:
  - Past accomplishments of each faculty member;
  - Potential and /or readiness of each faculty member to meet the tenure criteria with an appropriate probationary period;
  - Appropriate balance between seniority of current Associate and Full Teaching Professors and promise of current Assistant Teaching Professors.
- Decisions about *the length of individual probationary periods* will be recommended to the Provost by the Dean based on a collaboration between the individual faculty member, the Department Head, and the DTC, and the Dean.
- Teaching faculty who are not placed on a tenure-track will receive new secure longer- term contracts (T.B.D.)
- Resources must be made available to help CTAF expand its charge and its workload without detriment to the faculty and Faculty Governance staff or risk to the effective functioning of WPI's tenure review process. Time must be given to CTAF beginning in spring 2021 to revise its processes for tenure reviews to accommodate its expanded charge, including the possible revision of the DTC composition and process.

### **Overview of Related Governance Processes:**

Primary Actions (to be considered for a vote at the December 10 faculty meeting):

- Current Motion: Expand the tenured and tenure-track faculty to include Assistant, Associate, and Full Professors who may be designated as teaching intensive when appointed, and adopt tenure criteria for these positions.
- Two Related Motions:
  - Adopt guidelines for documenting and assessing activities toward tenure for Teaching Intensive Professors;
  - Revise Part One, Appendix D (THE ROLES PLAYED BY TENURED, TENURE-TRACK, AND NON-TENURE TRACK FACULTY IN CARRYING OUT WPI'S MISSION) of the Faculty Handbook.

Next Actions (to follow in order):

- Work with Administration and TRT Council to establish secure contracts for TRT faculty members not placed on tenure-track;
- Modify faculty governance processes to provide full governance participation to teaching faculty members on secure contracts.

**Date:** November 5, 2020

**To:** WPI Faculty

**From:** Committee on Governance (Prof. Boudreau, Chair)

**Re:** Motion to revise Part One, Appendix D (The Roles Played by Tenured, Tenure-Track, and Non-Tenure Track Faculty in Carrying Out WPI's Mission) in the Faculty Handbook – FOR DISCUSSION ONLY

**Motion:** The Committee on Governance recommends and I move that the text of Part One, Appendix D (The Roles Played by Tenured, Tenure-Track, and Non-Tenure Track Faculty in Carrying Out WPI's Mission) be updated as described below.

**Description of the Motion:**

The motion updates the existing Appendix D, whose current function is threefold: 1) to describe the respective roles played by the tenured and tenure-track (TTT) faculty and by the (non-tenure-track, NTT) teaching and research track (TRT) faculty; 2) to lay out an institutional goal (described in terms of credits to be delivered by the TTT faculty) in order to maintain an appropriate balance between the TTT and (NTT) TRT faculty; and 3) to provide for an annual report to the faculty detailing the numbers in and the academic credit delivered by each category of faculty.

In its place, this motion inserts a unified account of WPI's mission across the domains of teaching and research; it sets institutional goals for the balance of traditional TTT faculty with teaching-intensive faculty, and for the balance within the teaching-intensive faculty between TTT and TRT status; and it maintains the annual report to the faculty, measured in faculty numbers rather than in credits delivered.

**Original Text:** *(to be replaced)*

**APPENDIX D: THE ROLES PLAYED BY TENURED, TENURE-TRACK, AND NON-TENURE TRACK FACULTY IN CARRYING OUT WPI'S MISSION**

The tenured and tenure track Faculty at WPI play the primary role in fulfilling the University's academic mission, and are committed to shaping WPI's educational programs and to delivering a significant majority of the academic credit offered to WPI students. Consistent with this principle, the University is committed to maintaining a tenured and tenure-track Faculty of sufficient size to allow each tenured and tenure-track faculty member the time to carry out his or her responsibilities to both teach and engage in scholarship at the highest level. WPI meets this commitment by ensuring that the numbers of tenured and tenure-track Faculty at WPI increase at a rate that is commensurate with the University's growth and strategic needs.

WPI also recognizes the importance of the roles played by non-tenure track faculty both as engaging teachers and active scholars. Through their teaching, non-tenure track faculty members enhance new and existing educational programs. Through their research, the non-tenure track faculty complement and expand the range of scholarly expertise otherwise available on campus. Overall, the non-tenure track faculty provide the flexibility to respond to opportunities that help WPI sustain and build upon its reputation for academic excellence.

Early each fall, the Provost will provide a report to the Committee on Governance detailing the numbers (and full-time equivalents) in each category of faculty, and the percentages of academic credit delivered by each category of faculty across the institution, and within each department, division, and school (including Corporate and Professional Education). In collaboration with the Provost, the Committee on Governance will disseminate a final report to the Faculty and present the results for open discussion at a Faculty meeting during the same year.

**Proposed New Text:** *(to be added)*

## **APPENDIX D: THE ROLES AND BALANCE OF THE FACULTY IN CARRYING OUT WPI'S MISSION**

WPI's mission to create, discover, and convey knowledge at the frontiers of technological academic inquiry requires a faculty that conducts both research and teaching at the highest levels. Consistent with this mission, the University is committed to maintaining an appropriate balance of faculty who combine both research and teaching, and teaching faculty who primarily serve the educational mission as teachers and experts in pedagogy and course design.

WPI meets this commitment by maintaining a faculty successful balanced as follows: 70 percent (TTT) teaching-research faculty and 30 percent teaching-intensive faculty, of whom 50 percent are tenured or tenure-track, and 50 percent are non-tenure-track. The University may revisit these proportions as its strategic goals change.

Early each fall, the Provost will provide a report to the Committee on Governance detailing the numbers in each category of faculty across the institution and within each department, division, and school. In collaboration with the Provost, the Committee on Governance will disseminate a final report to the Faculty and present the results for open discussion at a Faculty meeting during the same year.

### **Rationale:**

Appendix D was added in 2011 to clarify faculty roles and provide institutional goals regarding the balance between TTT and NTT faculty. These goals were necessary once the faculty voted to abolish the "3- and 5-year rule" that limited time in service for non-tenure-track faculty. These goals were intended to help WPI maintain a strong presence of traditional TTT faculty even as the institution relaxed its restrictions on and welcomed longer-term commitments to NTT faculty.

Today, as we implement a new teaching-intensive path to tenure, WPI's commitment to both research and teaching at the highest levels depends on maintaining the right balance between teaching-research faculty and teaching faculty, and by including a significant number of teaching faculty within our TTT ranks. The appropriate balance should be based on WPI's teaching and research mission, the University's priorities and aspirations, and its institutional resources and strategy.

Specifically, the balance applies to two proportions:

- The first proportion approximates the desired and intended balance between traditional (teaching-research) tenured tenure-track faculty, on the one hand, and the entire teaching faculty (consisting of teaching intensive tenured-and tenure track faculty, TRT Teaching Professors, Professors of Practice, Instructors and Lecturers).
- The second proportion approximates the desired and intended balance between the teaching intensive TTT teaching faculty and the remaining teaching faculty (consisting of TRT Teaching Professors, Professors of Practice, Instructors and Lecturers).

In fall 2019, for example, there were 264 TTT faculty members at WPI and 120 full time teaching faculty members. WPI's current goal is to increase the number of traditional TTT faculty to approximately 300 within the next four years. The current faculty make-up embodies today's healthy balance required to carry out WPI's combined teaching and research mission, while the proposed expansion of the traditional TTT faculty is consistent with our goal to further enhance the impact of our research.

With respect to the first proportion, a sound five-year working institutional goal consistent with our current state and direction is to maintain a full-time faculty that is made up of approximately **70 percent** (300/420) traditional (teaching-research) tenured and tenure-track faculty and **30 percent** (120/420) teaching faculty (consisting of teaching intensive tenured-and tenure track faculty, TRT teaching professors, Professors of Practice, Instructors and Lecturers).

With respect to the second proportion, we have had several discussions between the faculty and the administration about the number of teaching intensive tenure lines that could be opened over a five-year period. In addition, and the TRT Council, based on their knowledge of our current teaching professors, has provided a preliminary estimate of the number of those faculty members who would be both interested in and see themselves as qualified for placement on a teaching intensive tenure-track as described by the proposed criteria. Based on this information, a reasonable working five-year goal consistent with administration, TTT faculty, and TRT faculty input is to maintain a full-time teaching faculty that is made up of approximately **50 percent** teaching intensive tenured and tenure track faculty and **50 percent** teaching faculty consisting of TRT teaching professors, Professors of Practice, Instructors and Lecturers.

These goals should be revisited periodically through campus-wide discussions that either affirm the soundness of the prevailing goals or develop an understanding and a consensus concerning the reasons and the ways they need to shift. While the goals are described quantitatively, there is flexibility in the understanding that they are approximate and can be reconsidered when necessary.

**Date:** November 5, 2020

**To:** WPI Faculty

**From:** Committee on Governance (Prof. Boudreau, Chair)

**Re:** Motion to add Guidance for Documenting and Assessing Activities Toward Tenure for Professors designated as teaching intensive – FOR DISCUSSION ONLY

**Motion:** The Committee on Governance recommends and I move that *Guidance for Documenting and Assessing Activities Toward Tenure* for Professors designated as “teaching intensive” be added to Section Two, Part 1.A of the Faculty Handbook (following the tenure criteria for Teaching Intensive Professors), as described below.

**Description of the Motion:**

The following guidance would be placed in the Faculty Handbook (Section Two, Part 1.A) to accompany the separate tenure criteria for Teaching Intensive Professors:

**Guidance for Documenting and Assessing Activities Toward Tenure for Professors Designated as Teaching Intensive:**

*For Documentation and Assessment of Teaching Practice:* When reviewed for tenure, each candidate is expected to submit materials that best demonstrate excellent teaching as measured by the *quality* and *impact* of their teaching skills and activities.

*Quality* of teaching activities can be documented in a combination of many ways that may include but are not limited to the following:

- Major Qualifying Projects, Interactive Qualifying Projects, and HUA Inquiry Seminars and Practicums advised, or co-advised;
- Dissertations, theses, and research projects advised and co-advised;
- Leadership demonstrated at project centers;
- Experiments with new pedagogical techniques;
- Efforts that develop or broaden cultural awareness;
- Self-reflections demonstrating how learning design is grounded in current educational research;
- Evidence of modifications to existing courses based on well-grounded rationale;

*Impact* of teaching activities on students (through learning, engagement, course and program outcomes, student well-being, and other measures of student success), on curriculum, and on teaching practice (through one’s own teaching practices and/or those of their WPI colleagues, or their department) can be documented in a combination of many ways that may include but are not limited to the submission of the following:

- Feedback from faculty peers (in the form of letters and/or rubrics, including from project co-advisors);
- Assessment of student learning outcomes;
- Evidence through assessments that course, project or program improvements have led to gains in student learning in the short term and/or over time;
- Student reflections on their experiences in MQPs, IQPs, and HUA Inquiry Seminars and Practicums advised or co-advised;

- Student reflections on their experiences in dissertation, thesis, or research projects advised or co-advised by the candidate;
- Feedback from project sponsors;
- Relevant awards, honors, or positive media coverage.
- Evaluations by students (through student course evaluations and surveys of former students);

*For Documentation and Assessment of Continuing Professional Growth and Currency:* When reviewed for tenure, each candidate is expected to submit materials that best demonstrate their *commitment* to and the *impact* of their continuing professional growth and currency, including how it enhances the effectiveness of the candidate's teaching and/or furthers a general understanding of effective teaching practices.

*Commitment* to continuing professional growth and currency can be documented in a combination of many ways that may include but are not limited to the following activities:

- Leadership by example, through continued innovation in approach and enhancement of one's own teaching methods;
- Teaching collaborations with other faculty, particularly in new approaches, areas, or pedagogies;
- Development of methods of assessment that better measure educational outcomes;
- Record of active scholarship (of Discovery, Teaching and Learning, Integration, Application and Practice, or Engagement); • Research collaborations with other faculty, including those regarding teaching practices, theories, or outcomes;
- Involvement in professional and academic creative output, inclusive of performance, visual, and written art forms; • Organizing and/or participating in teaching institutes, professional workshops, or professional conferences;
- Proposals submitted and grants awarded for funding related to teaching improvements or experiments, scholarship, or fellowships;
- Participation as a mentor in programs within or outside of WPI;
- Participation in competitive external professional development programs;
- Service as a reviewer on national, regional, or local grants panels;
- Completion of professional short courses;
- Earned professional certifications.

*Impact* of professional growth and currency on approaches to and understanding of teaching and learning, on teaching and learning networks and support systems (through delivery of workshops, seminars, mentorship, training; involvement in communities of practice, etc.); or on one's own scholarly discipline and/or scholarly communities can be documented in a combination of many ways that may include but are not limited to the following:

- New courses, curricula and/or academic programs based on emerging new fields, topics of contemporary relevance and/or interdisciplinary connections between emerging and/or existing areas (including data on enrollments and students positively affected);
- Significant revisions to existing curricula and/or academic programs based on the changing

content of a disciplinary field, the emergence of a new field, and/or interdisciplinary connections between emerging and/or existing areas that had not previously been available to WPI students (including data on enrollments and students positively affected);

- Demonstrably effective new or improved techniques or strategies to engage students in the classroom, via online delivery, or project advising;
- Dissemination of new or improved teaching approaches, techniques and strategies to colleagues at WPI and beyond;
- Feedback on teaching innovations from faculty peers.
- Feedback on scholarship from peers in the scholarly community and/or beneficiaries of the scholarly work.
- Adaptation of approaches, techniques, and strategies by other faculty, programs, and institutions;
- Invited keynotes and other invitations to speak or share teaching materials or scholarly work personally or in a public venue, conference, or workshop;
- Relevant awards, honors, or positive media coverage.

Service: The commitment to service can be judged in many ways, including (but not limited to) some of the following activities:

- Service to WPI (faculty governance and ad-hoc committees, assistance to administrative offices);
- Service to the candidate's department (curriculum committees, MQP area coordinators, faculty recruitment, seminar series participation and coordination);
- Service to the local community (board and committee membership in social service and cultural institutions, local government participation);
- Service to the profession (participation in national and international committees and panels, in local chapters of professional societies, in conference organization).

### **Rationale:**

The purposes of the itemized lists provided in this proposal are to suggest to tenure candidates and tenure committees the range of specific activities, efforts, and outcomes that are consistent with the tenure criteria for teaching intensive Professors.

the guidance for documentation and assessment outlined here is separate from the proposed tenure criteria for teaching intensive Professors, it is organized in parallel to those criteria. As a result, the guidance is separated into the main categories of Teaching Practice (sub-divided into *quality* and *impact*), Continuing Professional Growth and Currency (sub-divided into *commitment* and *impact*), and Service.

For the purposes of assembling, organizing, and evaluating a tenure dossier, the guidance is arranged according to the following sensibility. The *quality* of teaching practice may be documented through specific tangible efforts and/or artifacts that are produced in the practice of teaching, while the *impact* of teaching practice is measured by the effect one's efforts and the production of those artifacts have on others. *Commitment* to continuing professional growth and

currency may be documented by specific tangible activities, efforts, and artifacts produced in professional activities beyond teaching practice, while the *impact* is measured by the effect one's work in this broad professional category has on others. At the same time, there is also an understanding that the boundaries between these categories are not rigid, and as a result items listed in one place may also serve to demonstrate achievement in another.