WORCESTER POLYTECHNIC INSTITUTE

March 6, 2023

To: The WPI Faculty
From: Mark Richman
Secretary of the Faculty

The sixth Faculty meeting of the 2022-2023 academic year will be held on **Monday**, **March 6, 2023 at 10am in OH 107 and by Zoom at:** https://wpi.zoom.us/j/91034376055. Refreshments will be available in OH 107 at 9:45am.

1. Call to Order — M. Richman
   - Approval of the agenda
   - Approval of the consent agenda including minutes of the Feb. 2, 2023 meeting
2. Opening Announcements
3. Memorial Resolution: — R. Brown
   - In honor of Prof. Alex Emanuel (Professor, ECE)
4. Committee Reports:

   Committee on Governance (COG)
   - **Faculty Governance Elections: Committee Structure; Committee Responsibilities; and Election Process** — L. Albano
   - **Brief Update on Reorganization of and Revisions to the Faculty Handbook** — M. Richman

   Undergraduate Outcome Assessment Committee (UOAC)
   - **Updates on Student and Advisor Reports on IQP and MQP Learning** — D. Petkie, C. Demetry
5. Special Report:

   Center for Well-Being (CWB)
   - **Promoting a Culture of Care: How the Center for Well-Being Can Support Faculty and Students** — P. Fitzpatrick (Director, CWB)
6. New Business
7. President's Report — W. Soboyejo
8. Provost's Report — A. Heinricher
9. Closing Announcements
10. Adjournment

TABLE OF CONTENTS

Faculty Meeting Materials, March 6, 2023

WORCESTER POLYTECHNIC INSTITUTE
Faculty Meeting Minutes
February 2, 2023

Summary:

1. Call to Order: Approval of the Agenda, Consent Agenda, and Minutes of Dec. 19, 2022
2. Opening Announcements
3. Committee Reports: COG; COG
4. Committee Business: FAP
5. New Business
6. President's Report
7. Provost's Report
8. Closing Announcements
9. Adjournment

Detail:

1. Call to Order

The fifth Faculty Meeting of the 2022-2023 academic year was called to order at 3:20pm in Olin Hall 107 by **Prof. Richman** (AE). Prof. Richman reminded all those in attendance that the meeting was being recorded for the purpose of accurate minutes, only. The meeting agenda was approved as modified to accommodate the schedules of the presenters. The minutes of the December 19th meeting and the CAO and CGSR motions in the consent agenda were approved as distributed.

2. Opening Announcements

Prof. Richman pointed out that the spring faculty meeting schedule had been changed to remove as many obstacles to attending as possible, and he thanked all those in attendance for their flexibility in shifting their schedules to align with the new schedule.

Prof. Richman announced that the COG, CTAF, COAP and nominating ballots would be sent out soon, and that would begin the multistep committee election process to be concluded by the end of the academic year.

Prof. Coburn (BME; Chair, CASL) announced that CASL, the Morgan Teaching and Learning Center, and the Office of Academic Advising will conduct an academic advising training session for faculty advisors on February 14th to review campus-wide degree requirements and other relevant information. The training is geared towards new and early career faculty at WPI, but all faculty members are welcome. Prof. Coburn asked department heads to encourage their new faculty members to attend, and she pointed out that many who had signed up for the training were not new to WPI.

3. Committee Reports

Committee on Governance (COG): Second Annual Report on WPI Faculty Populations – and clarification of Faculty Categories

Prof. Albano (CEAE; Chair, COG), on behalf of the Committee on Governance, described Appendix D of Part One of the Faculty Handbook (The Roles and Balance of the Faculty in Carrying Out WPI's Mission). Appendix D describes the following institutional goals with respect to the full-time faculty: the faculty will consist of 70 percent tenured and tenure-track dual mission faculty and 30 percent teaching mission faculty; by fall 2023, 40 percent of the teaching mission faculty would be tenured or on the tenure-track and 60 percent would be off the tenure-track. According to the Appendix, each year COG is to give a report to the faculty on the various faculty populations. The Appendix also includes the possibility of the community revisiting these goals to make changes based on shifting priorities. (See **Addendum #1** on file with these minutes.)

The tenured and tenure-track faculty (TTTF) consist of the dual mission Assistant, Associate, and Full Professors, as well as the Assistant, Associate, and Full Professors of Teaching. The secure teaching faculty (STF) are those on 1-3-

3-5+ year contracts hired with the expectation of continuing academic responsibilities. The short-term (or critical need) teaching faculty are those on one-year contracts to fill temporary teaching needs. The important distinction between the STF and the short-term (critical need) teaching faculty is their contract status rather than their titles. Finally, we have adjunct teaching faculty who are paid on a course-by-course basis; research faculty (Assistant, Associate, and full Research Professors); visiting faculty from other institutions; and post-doctoral scholars.

Prof. Albano then presented the data for the current academic year. For academic year 2022-2023, there are 273 dual mission TTT faculty (3 more than last year): 104 in Engineering (2 more than last year); 143 in Arts and Sciences (one more than last year); 20 in Business (no change from last year); and 6 in the Global School (no change from last year). There are now 30 Professors of Teaching (15 more than last year due to the addition of the second cohort); 6 in Engineering (3 more than last year); 17 in Arts and Sciences (9 more than last year); 0 in Business (no change from last year); and 7 in the Global School (3 more than last year). There are 106 secured teaching faculty (14 fewer than last year because of the conversion of the second cohort to TTTF): 25 in Engineering (5 fewer than last year); 56 in Arts and Sciences (8 fewer than last year); 6 in Business (one more than last year); and 17 in the Global School (2 fewer than last year). So in all there are 303 (273 plus 30) TTTF (18 more than last year), 136 (30 plus 106) teaching mission faculty (1 more than last year), and 409 (303 plus 106) total full-time faculty (4 more than last year).

With reference to our institutional goals, 66.7 percent (273/409) of our faculty is TTT dual mission, so it would take an additional 44 TTT dual mission faculty (317/453) to get to our goal of 70 percent. Furthermore, our plan to place 3 cohorts of 15 teaching faculty on the teaching track to tenure by fall 2023 would mean that 33.1 percent (45/136) of our teaching faculty was tenured or on tenure-track by then, and we would need to shift roughly 9 additional secured teaching faculty to the tenure track to reach our goal of 40 percent (45+9=54; 54/136= .40) of the teaching faculty on the tenure track.

Prof. Albano clarified that by design in the faculty handbook, the focus of this report is on the distribution of faculty populations across the institution, rather than on the distribution of teaching loads within the various categories of faculty.

Finally, **Prof. Albano** showed more detailed population data broken down by department, and he also showed 2022-23 data for visiting faculty and post doctoral scholars, and 2021-22 data for adjunct faculty.

Prof. Martin (MA) clarified that depending on how additional teaching faculty were added or converted may or may not change the denominator in the calculations of faculty percentages.

Prof. Weathers (BBT) asked about how faculty members with joint appointments were categorized. **Prof. Albano** explained that they were categorized by their "home department," which is referenced in the Faculty Handbook.

Prof. Sanbonmatsu (HUA) provided the position of the AAUP, which is that faculty members without tenure do not have academic freedom. So he urged the faculty to push for well beyond the goal of 40 percent (tenured or on the tenure track) for our teaching faculty.

Prof. Boudreau (HUA) asked what the next moves are to reach the goals outlined here. **Provost Heinricher** pointed out the difficulty in increasing the size of the faculty because we have to overcome a natural five to six percent attrition rate just to remain fixed. So he saw the growth of the faculty as a long-term commitment. **President Soboyejo** explained that the stated goals had to be weighed against the need to not overcommit our resources.

Prof. Sarkis (BUS) asked if we had studied past trends that had reduced the percentage of dual mission faculty to under 70 percent of the total full time faculty. **Prof. Richman** explained that in past COG reports to the faculty on credits delivered (with data dating from about 2004 to 2018), the trends showed very slow growth in the number of dual mission faculty and much faster growth in the number of teaching mission faculty.

Prof. Danielski (HUA) asked how the growth or lack of growth in the faculty tracked with student growth. **Prof. Richman** pointed out that in past COG reports, credits delivered were a proxy for growth of the student population, so faculty and student growth could be seen simultaneously.

Committee on Governance (COG): Overview of Reorganization and Revisions to the Faculty Handbook

Prof. Richman provided an overview of an ongoing faculty governance project begun this past summer to reorganize the Faculty Handbook to make it clearer, more logical, and easier to use. He emphasized that the focus was on reorganizing rather than on making substantive revisions to policy or accepted practices. He pointed out that the current handbook is very much up to date but that the piecemeal changes we have made to it over the years have not been well synthesized. By reorganizing in this manner so that relevant information is combined into coherent sections, we may well recognize substantive changes that need be made in a second phase of the project. (See **Addendum #2** on file with these minutes.)

Prof. Richman identified four major themes around which the reorganization revolves: governance; academic appointments; tenure; and promotions. In each case, it was necessary to do editorial "microsurgeries" by combining sections, reorganizing within sections, extracting elements from different sections and combining into new ones, and then reassembling new sections into coherent chapters.

Prof. Richman categorized the hierarchy of changes as follows: pure reorganization; necessary editorial changes; corrections of obvious inconsistencies; helpful clarifications; simple process improvements; and documentation of accepted current practices that are not yet formally adopted.

Prof. Richman provided the following timeline for the project: Summer 2022, in which preliminary drafts were shared with select committee Chairs; Fall 2022, in which COG reviewed evolving versions and checked for consistencies and clarity and shared updated versions with President Soboyejo and University Counsel; January to February 2023, in which the latest relevant drafts were shared with all Committee Chairs, CTAF, COAP, and CTRF; and Spring 2023, in which a full draft will be shared with the faculty (by later this month), input from the community will be incorporated (March to May 2023), and our governance process will be followed for approval by the faculty (May 2023).

Prof. Wobbe (DIGS) asked for an example of a revision that documents an accepted current practice that has not yet been formally adopted. **Prof Richman** explained that when COAP reviews promotions to Associate and full Teaching Professor, (with only minor differences) the committee uses the elaborate process used for promotion to full Professor. While this practice is well accepted and to the benefit of the candidates and the institution, it has not been documented in the current faculty handbook. This is the kind of change that will be incorporated into the revised faculty handbook.

Prof. Gericke (CBC) asked how these changes will be tracked. **Prof. Richman** explained that the draft to be shared with the community will have modified language flagged to draw attention for discussion, and that questions about any item in the draft – whether it is flagged or not – will be answered. COG has been as sensitive as possible to the possibility that meaning can change just by shifting location, and the committee has flagged wording in the draft accordingly.

4. Committee Business

Committee on Financial and Administrative Policy (FAP):

Prof. Spanagel (HUA; Chair, FAP), on behalf of the Committee on Financial and Administrative Policy (FAP), moved that the resolution (included in the meeting materials) entitled "Divesting, Investing, and Transforming for Carbon Neutrality: Accountability in Energy Systems, Climate Action, and Sustainability at Worcester Polytechnic Institute" be endorsed by the WPI Faculty.

Prof. Strauss (DIGS) provided a brief history of the student and faculty efforts to encourage WPI's divestment from fossil fuels. Since May 2022, we have shared evolving drafts with the faculty, we have worked with the administration to expand the scope of the resolution to include all efforts to reach carbon neutrality at WPI, and she has made a detailed presentation about the resolution at our December 19 faculty meeting. (See **Addendum #3** on file with these minutes.)

Prof. Strauss reviewed the resolution paragraph by paragraph, pointing out that it calls on WPI not only to divest from fossil fuels, but also to develop a Culture of Sustainability that includes environmentally and ethically responsible investments, energy efficient processes, reduced consumption and waste, and education and research

connected with responsible stewardship, all unified in a Center for Sustainability at WPI. The resolution calls for a plan and effective tracking of progress toward goals to achieve transparency, visibility, and accountability, to unify the many efforts toward sustainability already underway at WPI, and to pursue new ways of becoming a model sustainable campus. Prof. Strauss emphasized that divesting, investing, and transforming is both a commitment and a process that will take time. We are not asking for elimination of fossil fuel use from campus immediately. Rather, we are asking for a thoughtful reduction and an attentive process to that end.

Prof. Richman reminded all those wishing to be recognized to limit their comments to one or two minutes or less. Any votes with respect to this resolution will be done by secret ballot.

President Soboyejo commended Prof. Strauss and FAP for the thoughtful way that they had worked with the administration to ensure that the stated goals are consistent with what WPI can achieve. President Soboyejo endorsed the resolution.

Prof. Kaminski (CBC) was strongly opposed to the resolution. In his view, the resolution is a part of a negative trend to increasingly politicize this institution, and to expose the students to a one-sided partisan view. He sees parallels to his past experiences in the former Soviet Union. Prof. Kaminski believes that the issue of climate change should be approached through science, engineering, and technology, rather than with political objectives.

Prof. Gottlieb (HUA) felt that it is not possible to exist in the modern world and in a modern university without being political. So each of us has to choose either the side that is defending a destructive environmental regime or the side that is trying to oppose it. He described the environmental crisis as a moral problem, citing that 40 percent of our students come to WPI on psychiatric medications; they are depressed, anxious and they lose faith in us. Passing this resolution is a chance to put a moral stamp on this institution; it is as good a place to start as he has seen.

Prof. Powell (MME) concurred with the actions of the resolution. However, in his view the real problem is a systematic campaign of disinformation that has stalled action on replacing fossil fuels and created a climate of anti-intellectualism that has denigrated the enterprise of reviewed scientific research - directly at odds with the WPI mission. He supported the resolution because there is almost no deviation between those who produce fossil fuels and those who promote this disinformation and government capture.

Prof. Mathisen (CEAE) supported the resolution and pointed out that there are many ongoing campus initiatives that are well aligned with the spirit of the resolution. He is encouraged by the culture of sustainability at WPI and hoped that we would continue to bring it into both our academic programs and our research.

Prof. Sanbonmatsu expressed the view that there has been a narrowing of the discourse about sustainability, and the resolution concentrates on one small portion of the problem. He encouraged us to include in the resolution action related to the animal economy. Prof. Sanbonmatsu proposed an amendment to add the following item to indicate that the WPI Faculty also:

10. *Strongly supports a shift to plant-based foods, with a goal of 60% of all foods on campus by 2025, in light of the facts that (1) animal agriculture is the second biggest source of greenhouse gas emissions, (2) animal agriculture and the fisheries industry are the leading cause of the mass species extinction and biodiversity crisis, and (3) the animal economy inflicts unjust suffering on countless billions of animals.*

The amendment was seconded.

Prof. Brown (SSPS) asked how many plant-based food options are already on campus. **Prof. Sanbonmatsu** explained that there has been no empirical study of this yet, but that anecdotally the vast majority of the food on campus appears to be animal-based, and the goal of 60 percent by 2025 seemed quite modest.

Prof. Kaminski (CBC) could support the amendment if reference to greenhouse gas emissions were eliminated.

Prof. Boudreau (HUA) was in favor of the amendment because it is both pragmatic and moral. While it is short on the details that Prof. Brown asked for, so too is the rest of the resolution, which we should vote to approve based on principle. The general sensibility is that the path we are on as a society is a dangerous one and we, as an institution, would like to retreat from it and set an example. We can work out the campus details as they arise.

Prof. Calli (RBE) supported the amendment but was concerned about the effect it would have on the price of food, especially for our students. **Prof. Sanbonmatsu** pointed out that plant-based foods can be less expensive than animal-based foods and that a can of beans costs 58 cents.

The motion to extend the meeting by 15 minutes passed.

Prof. Heineman (CS) was against the amendment because in his view introducing it at this late stage is not in keeping with the process of revising a resolution that dates back to May 2022. He would prefer to have some kind of analysis on which to judge the amendment.

Prof. Wobbe (DIGS) pointed out that our students comprise the vast majority of those who consume the food on campus, so they should be involved in this decision.

Prof. Spanagel spoke on behalf of FAP to explain why this wording was not included in the main motion. He thanked Prof. Sanbonmatsu for leading the campus on so many other issues. However, FAP believes that the resolution should stress WPI's role as an educational institution and as an actor on behalf of the whole of us, but it should not compel behaviors by individual members of the community. The version of the amendment that Prof. Sanbonmatsu has offered is a halfway measure between eliminating animal-based foods on campus, which would have been rejected by FAP for that reason.

Prof. Fehribach (MA) opposed the amendment because it referred to matters of personal choice rather than to institutional matters over which we have no control unless we weigh in with such faculty statements as the original resolution.

Prof. Hansen (HUA) offered the following amendment to Prof. Sanbonmatsu's amendment: (with **bold text** added and ~~struckthrough~~ text removed)

10. *Strongly supports **a study of the use of** ~~a shift to~~ plant-based foods~~, with a goal of 60% of all foods~~ on campus by 2025, in light of the facts that (1) animal agriculture is the second biggest source of greenhouse gas emissions, (2) animal agriculture and the fisheries industry are the leading cause of the mass species extinction and biodiversity crisis, and (3) the animal economy inflicts unjust suffering on countless billions of animals.*

The amendment was seconded.

Prof. Boudreau (HUA) spoke against the amendment because WPI doesn't need trustee approval to conduct a study of plant-based foods on campus. **Prof. Hansen** thought that his proposed amendment was consistent with the other items in the resolution and would be a strong statement that the faculty is concerned with this issue without setting a target. **Prof. Strauss** noted that the original resolution already includes the kind of study specified in Prof. Hansen's proposed amendment. She did not want the proposed amendment to prevent a vote today on the original resolution.

Prof. Sanbonmatsu (HUA) spoke against the amendment. The point of the resolution, in his view, is to identify our concerns having to do with carbon emissions. He noted that the global ecological emergency is largely caused by the animal economy, and he was dismayed that we don't want to address this directly in the resolution. The science on this matter comes from the World Resources Institute, the United Nations, the European Union, the World Wildlife Fund and many others.

The motion to call the question on Prof. Hansen's amendment was seconded and passed.

The motion to amend the amendment did not pass.

Prof. Sarkis rejected the argument that the amendment should be defeated on procedural grounds because the amendment process is part of our standard faculty procedures. Prof. Sarkis also rejected the argument that we need to let the students tell us what they want. The resolution before us began with the students, and now he thought it was time for the faculty to lead. He was in favor of the amendment.

Prof. Mortensen (CS) thought we needed data to support the amendment. In addition, the target deadline of 2025 will affect currently matriculated students who enrolled with different expectations about food availability on campus.

Prof. Martin (MA) opposed the amendment not because of the objective, but because he was not sure the three assertions are accurate and he doesn't believe they have been checked. **Prof. Sanbonmatsu** addressed the topic of process. He has been bringing these issues to the sustainability committee for almost 20 years, and students have been trying to introduce this initiative to Chartwells for 15 years. He noted that many universities (including Clark U.) have made such a change.

Prof. Eggleston (CEAE) disputed assertion 1) in the amendment.

Prof. Smith (IMGD) asked about how the action recommended in the amendment would be implemented. She would support the amendment if implementation involves a careful process involving the students, but not if changes were made unilaterally without student input.

A motion to extend the meeting by 15 minutes passed.

Prof. Spanagel (HUA), speaking as Chair of FAP, indicated that any resolution passed by the faculty is a form of communication to WPI administration and trustees and therefore is heavy on rationale and includes very specific actions. The purpose of a resolution is to make clear to the President and the trustees what we are asking them to do in the hope that they will respond appropriately.

The amendment did not pass.

The motion to end the discussion on the main motion passed.

The main motion passed.

5. New Business

There was no new business.

6. President's Report

President Soboyejo thanked the faculty for their response to the resolution and noted his appreciation for the exchange of ideas and the way that this process was conducted. He commended Prof. Sanbonmatsu for bringing up an idea that needs more discussion. He noted his appreciation for how faculty governance fosters this kind of respectful dialogue where divergent views sharpen our thoughts.

7. Provost's Report

Due to the late hour, **Provost Heinricher** passed on the opportunity to give his report.

8. Closing Announcements

There were no closing announcements.

9. Adjournment

Meeting was adjourned at 5:15pm by **Prof. Richman**.

Respectfully submitted,

Mark Richman
Secretary of the Faculty

Addenda on file with these minutes:
Addendum #1 - Second Annual COG Report on Faculty Populations AY2022-23- Minutes Feb 2, 2022
Addendum #2 - COG Faculty Handbook Revisions - Minutes Feb 2 2023
Addendum #3 - FAP Resolution to Divest-Invest-Transform - Minutes Feb 2 2023

Appendix
Consent Agenda Motions

Date: March 6, 2023
To: WPI Faculty
From: Committee on Academic Operations (Prof. Srinivasan, Chair)
Re: Motion to modify the recommended background for RBE 1001: Introduction to Robotics

Motion: On behalf of the Robotics Engineering Department, the Committee on Academic Operations recommends and I move that the recommended background for RBE 1001: Introduction to Robotics be modified, as described below.

Description of the Proposed Modifications:

Current Course Description:
RBE 1001. Introduction to Robotics Cat. I
Multidisciplinary introduction to robotics, involving concepts from the fields of electrical engineering, mechanical engineering and computer science. Topics covered include sensor performance and integration, electric and pneumatic actuators, power transmission, materials and static force analysis, controls and programmable embedded computer systems, system integration and robotic applications. Laboratory sessions consist of hands-on exercises and team projects where students design and build mobile robots. Undergraduate credit may not be earned for both this course and for ES 2201.

Recommended background: mechanics (PH 1110/ PH 1111).

Proposed Course Description:
[The description is unchanged, only the recommended background is changed, as below.]

Recommended background: CS 1004 or significant experience with programming in python. PH 1120 or PH 1121.

Rationale:
RBE 1001 is the introductory course in Robotics Engineering. Currently, the recommended background does not include any programming courses, and students without significant programming experience tend to struggle in the course. By recommending a background related to a common programming language in robotics, students will have a more even set of skills across the board, which is expected to improve course outcomes.

In addition, PH 1110/1111 are replaced with PH 1120/1121 to better prepare students for analyzing fundamental electrical (sensor) circuits.

Impact on Degree Requirements: There is little effect on degree requirements. Students may need to delay taking RBE 1001, but we find that students who enroll in RBE 1001 in A-term of their first year are the most "at risk" for not having programming skills. Most students will use CS 1004 to meet the CS Requirement in Robotics Engineering. Students who are considering double-majoring in CS may need to take an extra course (CS 1101/1102 are recommended for CS), but students who are considering a double-major often have the necessary programming background already.

Resources and Anticipated Instructors: RBE is in consultation with the CS Department, as the change will require a shifting of resources from CS 1101/1102 to CS 1004. Students who take CS 1004 are more likely to take CS 2119 (instead of CS 2102/2103), which may also require a re-allocation of resources.

Implementation Date: 2023-2024 academic year.

Date: March 6, 2023
To: WPI Faculty
From: Committee on Academic Operations (Prof. Srinivasan, Chair)
Re: Motion to modify the recommended background for RBE 2001: Unified Robotics I

Motion: On behalf of the Robotics Engineering Department, the Committee on Academic Operations recommends and I move that the recommended background for RBE 2001: Unified Robotics be modified, as described below.

Description of the Proposed Modifications:

Current Course Description:
RBE 2001. Unified Robotics I
First of a four-course sequence introducing foundational theory and practice of robotics engineering and the application of concepts from the fields of computer science, electrical engineering and mechanical engineering to the design of robots. The focus of this course is the effective conversion of electrical power to mechanical power, and power transmission for purposes of locomotion, and of payload manipulation and delivery. Concepts of energy, power and kinematics will be applied. Concepts from statics such as force, moments and friction will be applied to determine power system requirements and structural requirements. Simple dynamics relating to inertia and the equations of motion of rigid bodies will be considered. Power control and modulation methods will be introduced through software control of existing embedded processors and power electronics. The necessary programming concepts and interaction with simulators and Integrated Development Environments will be introduced. Laboratory sessions consist of hands-on exercises and team projects where students design and build robots and related sub-systems.

Recommended background: RBE 1001, ES 2501, and either PH 1120 or PH 1121.

Proposed Course Description:
[The description is unchanged, only the recommended background is changed, as below.]

Recommended background: RBE 1001, ES 2501, and any of CS 2119 or CS 2102 or CS 2103.

Rationale:
RBE 2001 is the first of the core courses in Robotics Engineering. Currently, the recommended background does not include any programming courses, and students without significant programming experience tend to struggle in the course. By recommending a CS course in object-oriented programming, students will have a more even set of skills across the board, which is expected to improve course outcomes.

In addition, "PH 1120 or PH 1121" are removed because RBE 1001 has them as recommended background.

Impact on Degree Requirements: The impact is minor because most students already take CS 2119/2102/2103 to meet the Object-oriented Programming Requirement in the RBE major. CS 2119/2102/2103 are also commonly taken to meet the requirements of the RBE Minor. We do not anticipate the addition of a course to the recommended background to delay enrollment in RBE 2001, as many students take RBE 2001 in C-term of their second year already, and it's straightforward to take the recommended CS course in one of the six terms prior.

Resources and Anticipated Instructors: No additional resources are required, as the courses are already used by most students to meet degree requirements.

Implementation Date: Implementation date is the 2023-2024 academic year.

Date: March 6, 2023
To: WPI Faculty
From: Committee on Academic Operations (Prof. Srinivasan, Chair)
Re: Motion to add RBE 4540 Vision-based Robotic Manipulation

Motion: On behalf of the Robotics Engineering Department, the Committee on Academic Operations recommends and I move that RBE 4540 *Vision-based Robotic Manipulation,* as described below, be added.

Description of the Proposed Course:

Proposed Course Description:
RBE 4540, Vision-based Robotic Manipulation (Cat. I).
This course focuses on the role of visual sensing in robotic manipulation. It covers fundamental manipulation concepts such as mathematical grasp formulations, grasp taxonomies, and grasp stability metrics. Various grasp planning strategies in the literature are studied. 2D and 3D vision-based control algorithms are covered. Point cloud processing techniques that allow object detection, segmentation, and feature extraction are studied and implemented. Students will integrate all of these aspects to design the whole vision-based robotic manipulation pipeline.

Recommended background: Knowledge of robot kinematics, wrench spaces, and rigid body transformations as presented in RBE 3001. Familiarity with robotic simulation software as presented in RBE 3002.

Contact: Prof. Berk Calli
Preferred term: A
Expected enrollment: 30
Course type: Undergraduate
Intended audience: All RBE senior year students and advanced junior year students.

Anticipated Instructor: Prof. Berk Calli
Other RBE faculty who could also teach the course: Jing Xiao, Nitin Sanket, Mahdi Agheli

Rationale:
This course will provide complementary knowledge for undergraduate robotics engineering students in robotic grasping and manipulation, vision-based control, and point cloud processing.

The course was offered twice as an experimental course and received very positive feedback (course evals of 4.5/5). The course has been in high demand, with course enrollments of 30 students in each term it was taught, with full wait lists. Currently there are no courses in the RBE undergraduate curriculum that covers topics such as how to synthesize stable grasps that enable robots picking objects, how the visual information is utilized to control the full pose of the robot, how to formulate a manipulation problem mathematically and derive practical solutions considering the robotics hardware and software. As such, the resources to equip the RBE students to implement full manipulation pipeline that unifies image/point cloud processing, object-robot interactions, and high-level reasoning are limited. These knowledge and skills taught in this course are in high demand in several industries, including manufacturing, logistics (warehouse management), assistive/service technologies, and waste recycling, among many others. Robotic manipulation is also an active research domain, and the materials covered in this course will give the students a significant lead on recent developments. The course is designed to minimize overlaps and achieve continuity with the RBE 3001-3002 series. The course uses simulations as the main form of implementation, and the students will gain significant practical experience in various image processing and robot coding

tools. If real robot setups become available for educational use, they can easily be integrated into the course content.

Resource Needs:

- Berk Calli is planned to teach this course. Jing Xiao's research is also directly related to this course.
- The course population will be limited to 30. No special requirements are needed for the classroom other than the 30-student capacity.
- The course will require 1 TA or grader support. If additional TAs are provided, the course capacity can go up to 60 students.
- Students will be able to use their own computers during the lab hours.
- This course does not have a primary textbook. It utilizes various research papers, and some chapters of the books that are available in our library.
- The course will require ROS-installed virtual machines, which are available through the RBE department.

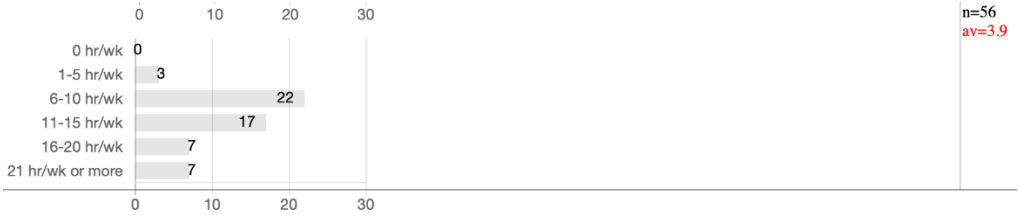
Assessment: The course will be assessed via student feedback, and instructor feedback and reflections at the end of each offering. Students' ratings about the instructor and the overall course content as well as the total time spent by the students outside the formally scheduled classes will be considered as the primary indicators.

Prior Enrollments:

- In the academic year 2021-2022, the course was offered in the A term and was enrolled in full capacity with 30 students. The waiting list was also full with 5 students.
- In the academic year 2022-2023, the course was offered in the A term and was enrolled by 28 students (initially the course was enrolled with full capacity and a full waiting list. However, there were two last minute drops).

Course Evaluation:

- In the academic year 2022-2023, the overall rating of the course was 4.5 (19 students completing the survey). The overall rating of the instructor's teaching was 4.3 and the educational value of the assigned work was 4.5. The amount students learned from the course relative to other courses was 4.4. The following is the number of hours students reported spending on the course:



- In the academic year 2021-2022, the overall rating of the course was 4.5 (22 students completing the survey). The overall rating of the instructor's teaching was 4.4 and the educational value of the assigned work was 4.7. The amount students learned from the course relative to other courses was 4.4. The following is the number of hours students reported spending on the course.

<u>Appendix</u>:
Learning Outcomes and Student Outcomes
RBE 450X: Vision-based Robotic Manipulation
Robotics Engineering Department
A-Term 2022

Learning Outcomes (LOs):

At the end of the semester, you will be able to

- LO1: navigate through the past and recent manipulation literature
- LO2: derive kinematic models for a robotic grasp
- LO3: utilize methods to calculate grasp stability
- LO4: utilize basic image processing tools
- LO5: implement vision-based control techniques
- LO6: synthesize grasps for a given object
- LO7: employ vision-based techniques to grasp unknown objects
- LO8: implement a full manipulation pipeline

RBE Department Student Outcomes (SOs):

Each of the Course Learning Outcomes (LOs) addresses one or more of the RBE Department Student Outcomes (SOs) listed below:

- <u>SO 1</u>: Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- <u>SO 2</u>: Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- <u>SO 3</u>: Communicate effectively with a range of audiences
- <u>SO 4</u>: Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- <u>SO 5</u>: Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- <u>SO 6</u>: Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- <u>SO 7</u>: Acquire and apply new knowledge as needed, using appropriate learning strategies
- <u>SO 8</u>: Evaluate and integrate the mechanical, electrical, and computational components of a cyber-physical system
- <u>SO 9</u>: Recognize and take advantage of entrepreneurial opportunities

Course LOs relates to RBE Department SOs according to the following table:

		RBE Department Student Outcomes (SOs)									**Measured by**				
		SO 1	**SO 2**	**SO 3**	**SO 4**	**SO 5**	**SO 6**	**SO 7**	**SO 8**	**SO 9**	HWs	Exams	Labs	Projs	Others (Specify)
Course LOs	LO 1	X		X	X										Reading Materials
	LO 2	X	X					X			X				
	LO 3	X	X					X			X				
	LO 4	X	X					X			X				
	LO 5	X	X				X		X		X				
	LO 6	X	X				X		X		X				
	LO 7	X	X			X	X		X					X	
	LO8	X	X	X		X	X		X	X				X	
Extent of Coverage	No														
	Small			X	X					X					
	Mod					X									
	Large	X	X				X	X	X						

Date: March 6, 2023
To: WPI Faculty
From: Committee on Academic Operations (Prof. Srinivasan, Chair)
Re: Motion to modify the distribution requirements for the Industrial Engineering (IE) major

Motion: On behalf of the Business School, the Committee on Academic Operations recommends and I move that the distribution requirements for Industrial Engineering (IE) be modified, as described below.

Description of the Proposed Modifications:

Current Program Distribution Requirements for the Industrial Engineering Major:
(See: WPI 2022-23 Undergraduate Catalog, pages 127-128)

> ***Note 2.2***
> 2. IE Electives (3/3 units): Any 3000- or 4000-level Operations Research courses in MA; MIS 3720, 4084, 4720, 4741; OIE 3405*, 3600*, 4410, 4430*, 4460.
>
> *Only if not taken in IE Core.

Proposed Change in Program Distribution Requirements for the Industrial Engineering Major:
(Additions highlighted in yellow.)

> ***Note 2.2***
> 2. IE Electives (3/3 units): Any 3000- or 4000-level Operations Research courses in MA; MIS 3720, 3787, 4084, 4720, 4741; OIE 3405*, 3600*, 4410, 4430*, 4460.
>
> *Only if not taken in IE Core.

Rationale:
The change is to add MIS 3787 Business Applications of Machine Learning as an elective for IE students. This increases flexibility for IE majors.

Resource Needs: No new resources are required.

Impact on Distribution Requirements and Other Courses: Change in distribution requirements described in the motion.

Implementation Date: 2023-2024 Academic year.

Contact: Prof. Sharon Johnson

Date: March 6, 2023
To: WPI Faculty
From: Committee on Academic Operations (Prof. Srinivasan, Chair
Re: Motion to add BUS 2001: WPI Means Business

Motion: On behalf of the Business School, the Committee on Academic Operations recommends and I move, that BUS 2001: *WPI Means Business*, as described below, be added.

Proposed Course Description:
BUS 2001 WPI Means Business
This course is designed to broaden student perspectives on business through experiential learning in entrepreneurship, finance, strategy and marketing, organizational behavior, and operations. By exposing students to various business disciplines and a wide range of firms and business models, we intend to accelerate student impact through an engaging, immersive experience. During on- and off-site situation workshops, students will engage with practitioners to discuss business challenges and decisions in a small-group format. Students will also be matched with alumni to de-brief topics related to cases and prepare a learning portfolio as a culminating assignment. By the end of the course students will have a broader understanding of business domains, increased business fluency, and a better understanding of decision-making within a relevant business context.
Recommended background: None

Anticipated Instructor: Brent French

Rationale:
Ninety percent of WPI students join business organizations upon graduation but only 15 percent of non-WBS undergraduates take a business course. Alumni often express regret about not learning more about business prior to beginning careers in for-profit, non-profit, or government organizations. From the student point of view, this course is desirable because they 1) will interact with real business problems in a case format, 2) gain on-site and off-site broadening experiences, 3) will grow their network through coaching/mentoring, and 4) will develop an individual portfolio of skills to complement their project-based learning.

Target population: Employers want engineers and scientists who are knowledgeable about business. While our goal is to attract interest from all non-business majors, our first focus is ME and CS students as they are two of the largest majors on campus. Students will be exposed to competencies like value creation, finance, marketing strategy, leadership, and operations, which will prepare these non-business majors for internships, MQPs, and life beyond WPI.

Resource Requirements: Resource Need

1) Instructor: The WBS instructor-of-record is available; will need an adjunct off-set to accommodate this new assignment.
2) Classroom: Standard classroom
3) Laboratory: none
4) Library resources: No additional needs for library resources

5) Information Technology: No special support or equipment is needed from the ATC.
6) Other: WBS will cover any expenses for off-site situation workshops, e.g., transportation arrangements for on- and off-site workshops and for mentors will be supported by WBS Staff and Advancement (corporate relations).

Impact on Distribution Requirements and Other Courses: There is no impact on other programs' distribution requirements.

Appendix: Data from Offerings as an Experimental Course (C-Term 2022)

The course was offered once in AY21/22 and is occurring in C and D terms in AY22/23 because we are still learning about enrollment demand. Based on registrations for C & D term this year that met/exceeded enrollment capacity, there is evidence supporting two or more offerings in future years. The 25 person cap is based on the ability of firms to accommodate site visits; it is possible that in the future we could have a 50 person cap and break the class into two simultaneous site visits, but it would still be offered several times a year to maximize student enrollment opportunities.

Student Feedback:

1. Student feedback:
   - *"Great introduction to business and planning personal career success. I would highly recommend to other motivated CS majors who are aiming past being keyboard pushers"*
   - *"It made me start getting a MS in the business school here, this class was super important for my career and opened up my eyes to everything business related. It taught me how us engineers move up the ranks in companies and how we can do that."*

2. Feedback from course evaluations, quotes from students, reflecting their learning experience:
   - *"I loved the amount of hands-on learning we received during the course. Going to all the different businesses, talking with employees from all levels of their company, and really experiencing what it is like at some of these top places firsthand. That is a really beneficial experience that I think everyone at WPI should take advantage of. I also really liked the conversations we had in class. The topics of Milton Friedman and the different philosophies in business purpose, grouping of teams, etc. It was really a great experience and I wish there was another class to follow up with."*
   - *"I particularly like that the majority of work for this class was self-contained which provided me with more time to appreciate what I was learning instead of struggling to juggle an extensive amount of busy work' like my other classes. I would say that overall, I have learned more in this class than my entire sophomore year combined."*
   - *"We covered a lot of basics about business, such as finance and promoting growth, but didn't have enough time to fully go into more in- depth topics. I wouldn't mind if we met more frequently over the week to get a better understanding of the topics."*
   - *"The unconventional structure fit very well with the course material. I definitely got a lot out of the field trips but I also enjoyed the guest lectures."*

3. Outcomes from questions 1, 2, 9, and 19 of course evaluations (French):
   2021-22 resp. 1) 4.9 2) 4.7 9) 4.8 19) 15 of 19 reported 1-5 hours; this was our intention

   Workload is aligned with learning objectives; our intent was to create a meaningful learning experience for students for whom it is likely to have workloads of greater than 10-15 hours per week in their other courses (e.g., CS and ME majors in their sophomore year)

and whom may otherwise be disinterested in taking an introductory business course. Anecdotally, students are spending 8-10 hours of their discretionary time/effort during weeks with mentor sessions and site visits (five out of the seven weeks) doing research on their own to prepare for these key events.

Our intention is to offer a course that will attract the attention of non-business majors, who have little to no experience with one of our courses. Our approach for a course like BUS 200X at the intersection of business and STEM, differs compared to a fully STEM-themed courses that tend to have more tangible equations, problem sets with a set of conditions, lab exercises, etc. We rely heavily on critical thinking and self-directed research related to business cases studies, business concepts and unique to this course, company visits. Students are also paired with corporate mentors. Class time is spent learning about general concepts and seeing them in action, along with discussing why and how business decisions are made, which job functions were involved, how it impacted the customers, suppliers, and surrounding community. This type of prep is done outside of class for each session, but also for each company visit. Students are also required to interact with mentors at least three times during the term, with preparation and follow-up activities between interactions. After the first offering, we determined student learning would benefit from more individual assignments where they apply business concepts and periodic formative assessments will enhance learning goals. Therefore, we are revising the course, including more individual assignments, which will make a 15-20% increase of time spent outside of class.

4. Instructor feedback and reflections:
   - Site-visits, guest lecturers, alumni-mentors, and providing in-class meals make this course logistically challenging for the instructor. The help and support of the WBS Programs Team (Lorelle Tross, Laurie Stokes, and Tom Clark) and University Corporate Partnerships (David Ortendahl) was critical to our success.
   - Disciplinary support from ETR (Marty Ferguson), FIN (Rob Sarnie), MKT (Farnoush Reshadi), and OIE (Renata Konrad) was invaluable to success of the first offering. As we increase sections, we need to be cognizant of protecting faculty schedules.
   - Course curriculum was sufficiently broad to introduce the gamut of business disciplines; during the final debrief a student commented that it felt like an MBA-Light. This comment resonated with me, and as a result I plan to adopt Barron's *The Visual MBA* or Pearson & Thomas' *The Shorter MBA* as a textbook.
   - Several students would have preferred more work with core business concepts like ROI, SWOT, etc., so I plan to introduce several low-stakes formative assessments without increasing out-of-class study time. This will also help strengthen our rationale for accepting transfer credits related to Introduction to Business courses offered at different universities.

5. Population numbers:

C '22	BUS 200X = 28	Total = 28
C '23	BUS 200X = 15 (currently registered)	
D '23	BUS 200X = 16 (currently registered)	

Date: March 6, 2023
To: WPI Faculty
From: Committee on Academic Operations (Prof. Srinivasan, Chair)
Re: Motion to modify the course description of MIS 3720 Business Data Management

Motion: On behalf of the Business School, the Committee on Academic Operations recommends and I move that the course description for MIS 3720: Business Data Management be modified, as described below.

Description of the Proposed Modifications:
(with additions highlighted in yellow)

MIS 3720 Business Data Management Cat. I
This course introduces students to the theory and practice of database management and the application of database software to implement business information systems that support managerial and operational decision making. Special topics covered include relational data models, query languages, normalization, locking, concurrency control and recovery. The course covers data administration and the design of data tables for computerized databases. Students will use a commercial database package to design and implement a small business database application.
Recommended Background: Some programming knowledge (e.g., CS 1004, CS 2119, OIE 2600 or equivalent knowledge)

Rationale:
The recommended background is being updated to do a better job at appealing to student interest.

Resource Needs: No new resources are required.

Impact on Distribution Requirements and Other Courses: No change on distribution requirements. Students, both business and non-business majors, will now be able to clearly identify this business topic when choosing courses to take.

Implementation Date: Academic year 2023-2024.

Contact: Prof. Adrienne Hall-Phillips

Date: March 6, 2023
To: WPI Faculty
From: Committee on Academic Operations (Prof. Srinivasan, Chair)
Re: Motion to modify the course number and description of OIE 3600: Scripting for Process and Productivity Improvement

Motion: On behalf of the Business School, the Committee on Academic Operations recommends and I move to that the course number and description of OIE 3600: Scripting for Process and Productivity Improvement be modified, as described below.

Description of the Motion:

Current Course Description:
OIE 3600 Scripting for Process and Productivity Improvement Cat. I
This course will train students to think critically about the effective and efficient use of computational tools to enhance everyday organizational performance. Students will learn how to create value through productivity tools that will likely include advanced spreadsheet functionality, regular expressions, macros, and scripting. The course will make use of software including Microsoft Excel with Visual Basic for Applications, Python, and advanced text editors, applied to a variety of domains, to improve students' ability to automate processes and productivity. Students can receive credits for both OIE 3600 and either CS 2119 or CS 2102 or CS 2103. For IE majors, if one of the CS courses previously listed is used as a required programming course, then OIE 3600 can be used as an IE elective.

Recommended Background: some previous exposure to analytical problem solving as found in OIE 2081 or MA 2210.

Proposed Course Description:
(changes highlighted in yellow)

OIE 2600 Scripting for Process and Productivity Improvement Cat. I
This course will train students to think critically about the effective and efficient use of computational tools to enhance everyday organizational performance. Students will learn how to create value through productivity tools that will likely include advanced spreadsheet functionality, regular expressions, macros, and scripting. The course will make use of software including Microsoft Excel with Visual Basic for Applications, Python, and advanced text editors, applied to a variety of domains, to improve students' ability to automate processes and productivity. Students can receive credits for both OIE 2600 and either CS 2119 or CS 2102 or CS 2103. For IE majors, if one of the CS courses previously listed is used as a required programming course, then OIE 3600 can be used as an IE elective. Students cannot receive credit for both OIE 2600 and OIE 3600.

Recommended Background: some previous exposure to analytical problem solving as found in OIE 2081 or MA 2210.

Rationale:
The OIE course number is no longer an accurate representation of the level of content being presented. The lower course number will allow for increased student interest.

Resource Needs: No new resources are required.

Impact on Distribution Requirements and Other Courses: No change in distribution requirements. Students, both business and non-business majors, will now be able to clearly identify this business topic when choosing courses to take.

Implementation Date: Academic year 2023-2024.

Contact: Prof. Adrienne Hall-Phillips

Date: March 6, 2023
To: WPI Faculty
From: Committee on Academic Operations (Prof. Srinivasan, Chair)
Re: Motion to modify the course description of CS 4123: Theory of Computation

Motion: On behalf of the Computer Science Department, the Committee on Academic Operation recommends and I move that the course description of CS 4123: Theory of Computation be modified, as described below.

Description of the Motion:

Current course description:
CS 4123: Theory of Computation Cat II
Building on the theoretical foundations from CS 3133, this course addresses the fundamental question of what it means to be "computable," including different characterization of computable sets and functions. Topics include the halting program, the Church-Turing thesis, primitive recursive functions, recursive sets, recursively enumerable sets, NP-completeness, and reducibilities. Students will be expected to complete a variety of exercises and proofs. This course will be offered in 2021-22, and in alternating years thereafter.
Recommended Background: CS 3133.

Units: 1/3

Proposed description:
CS 4123: Theory of Computation Cat II
Building on the preliminaries established in CS 3133, this course explores fundamental questions of computability and complexity. Emphasis is on both mathematical foundations and applications to computing practice. Topics include the Church-Turing thesis, the halting problem, NP-completeness, time and space complexity classes, and related material as determined by the instructor. Students will be expected to read and write mathematical proofs.
Recommended Background: CS 3133.

Units: 1/3

Rationale:
The old description does not reflect current best practices in delivering the most important topics to be addressed in a contemporary Theory of Computation course.

The new description updates the topics to be covered in the class, without changing its fundamental goals.

Impacts on students: No change from the current circumstances, beyond bringing the description in line with recent practice.

Resource Needs: No change from the current circumstances.

Implementation Date: Academic year 2023-24

Date: March 6, 2023
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Medich, Chair)
Re: Motion to remove focus areas from the Interactive Media and Game Development M.S. Program requirements

Motion: On behalf of the Interactive Media and Game Development (IMGD) Program, the Committee on Graduate Studies and Research recommends and I move that focus areas be removed from the IMGD Master of Science Degree requirements, as described below.

Description of the Proposed Modifications:

Program of Study
(with deleted text ~~struck through~~, and added text in red.)

The Master of Science in Interactive Media & Game Development (IMGD) is designed for those interested in the design of immersive, interactive environments. The intended audience includes college graduates looking for continued education in interactive media, game-industry professionals looking to assume leadership roles, professionals from other fields retooling for the game industry, and those seeking scholarship in interactive media. Graduate students in IMGD: 1) take core courses that provide a base of knowledge relevant to the design of interactive media; 2) select courses ~~from Technical, Serious Games, or Management Focus areas that enable tailoring~~ that tailor the degree to suit interests and career goals; and 3) design, develop, and evaluate a substantial group project and/or undertake a thesis with novel scholarship as a capstone experience. Graduates with an IMGD graduate degree will be qualified to pursue a diverse range of careers in the interactive media, computer games, or related industries, becoming producers, designers, academics, or project leaders in specific subfields such as technology, art, or design.

Admissions Requirements
No change

Degree Requirements
(with deleted text ~~struck through~~, and added text in red.)

IMGD M.S. students undertake a Game Design Studio course (3 credit hours), ~~a~~ core courses relevant to their ~~focus are (3~~ interests (12 credit hours), and two ~~other core courses (~~ elective courses selected by the student and approved by the advisor 6 credit hours). Each student is required to complete either a Master's thesis (a systematic approach to addressing an identified research question, typically done individually) or a Master's project (a substantial development effort that follows a production plan to implement a design vision, typically done in teams) to complete the degree requirements (9 credit hours).

The IMGD program also offers a B.S./M.S. program for current IMGD undergraduate students. Students enrolled in this program may count up to 12 credit hours of specific undergraduate courses towards both their B.S. and M.S. degrees.

Details on the degree requirements for both M.S. and B.S./M.S. students can be found here: http://imgd.wpi.edu/ gradrequirements.html

(In accompanying degree breakdown tables, remove the "Focus Area Core Course" table, the "Focus Courses" list, and the "Elective Course" table.)

This change will replace a required Focus Area Core Course with a Core Course. Two Focus Area electives will be replaced by an additional Core Course and an additional elective course selected in consultation with each student's advisor.

Current Requirement	**Requirement Change**
IMGD 5000 – Game Design Studio (3 credits)	None
Core Course Electives (6 credits)	None
Focus Area Core Course (3 credits)	Replace with Core Course Elective (3 credits)
Focus Area Electives (6 credits)	Replace with one additional Core Course Elective and one elective selected with advisor approval (6 credits)
Elective (3 credits)	Elective (3 credits) - this elective is now selected with advisor input and approval
Thesis / Project (9 credits)	None

Rationale:
The Focus Areas were initially created to provide appeal to companies paying for professional training via IMGD MS degrees. However, this turned out to be a very small percentage of IMGD MS students; for example, there are currently no IMGD MS students supported by professional training funding from their employers. The Focus Areas impose course restrictions on students that are unnecessarily complex. Most importantly, IMGD is an interdisciplinary program by nature, and we strongly believe that IMGD students shouldn't be siloed into further subdisciplines that limit their studies.

In place of the Focus Areas, through academic advising we will provide suggested pathways for students to follow through their degree depending on their interests. However, these pathways are only suggestions (unlike the current Focus Areas) and will be provided on the IMGD website and not listed in the catalog.

Impact on Degree Requirements: This change will replace a required Focus Area Core Course with a Core Course. Two Focus Area electives will be replaced by an additional Core Course and an additional elective course selected in consultation with each student's advisor. (See table above.)

Resources and Anticipated Instructors: No changes**.**

Implementation Date: Implementation date is the 2023-2024 academic year.