

**WORCESTER POLYTECHNIC INSTITUTE**

November 8, 2023

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

The third Faculty meeting of the 2023-2024 academic year will be held on **Wednesday, November 8, 2023 at 12:30pm in OH 107 and by Zoom at: <https://wpi.zoom.us/j/96067029008>**. Refreshments will be available in OH 107 at 12:15pm.

- |  |               |
|--|---------------|
| 1. Call to Order   | M. Richman    |
| • Approval of the Agenda   |               |
| • Consideration of the Consent Agenda including the minutes from October 5, 2023   |               |
| 2. Opening Announcements   | M. Richman    |
| 3. President's Report  | G. Wang       |
| 4. Committee Business:   |               |
| Committee on Governance (COG)  | G. Heineman   |
| • <b>Motion to Establish a Formal Procedure to Resolve Faculty Allegations of Academic Freedom Violations</b> (for discussion, only) | M. Claypool   |
| Committee on Graduate Studies and Research (CGSR)  | S. Olson      |
| • <b>Motion to establish an M.S. Program in Global Health</b>  | K. Oates      |
| • <b>Motion to establish a STEM-certified MBA in Analytics</b>   | P. Shah       |
| 5. New Business  |               |
| 6. Provost's Report  | A. Heinricher |
| 7. Closing Announcements   |               |
| 8. Adjournment   |               |

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# WORCESTER POLYTECHNIC INSTITUTE

## Faculty Meeting Minutes

October 5, 2023

### Summary:

1. Call to Order; Approval of the Consent Agenda including the Minutes of August 31, 2023
2. Secretary of the Faculty's Report and Opening Announcements
3. President's Report
4. Committee Business: CTAF/COG; CITP
5. New Business
6. Provost's Report
7. Closing Announcements
8. Adjournment

### Detail:

#### 1. Call to Order

The second Faculty Meeting of the 2023-2024 academic year was called to order at 3:15pm both in person and via ZOOM by **Prof. Richman** (AE). Prof. Richman reminded all those in attendance that the meeting was being recorded for the purpose of taking accurate minutes, only. The meeting agenda, the minutes from the August 31<sup>st</sup> meeting, and the consent agenda were approved as distributed. Prof. Richman drew special attention to two of the motions in the consent agenda from CGSR describing modifications to MIS 520 (AI and its Ethical Applications in Business) and FIN 530 (Cryptocurrencies and Financial Markets) that have been made to address concerns (raised at our last May 2023 meeting when the M.S. program in Financial Technology was approved by the faculty) that ethical issues had not been adequately covered in the program as originally proposal.

#### 2. Secretary of the Faculty's Report and Opening Announcements

**Prof. Richman** pointed out that as part of our ongoing experimentation with the days and times of the faculty meetings to make it easier to attend, our two B-term meetings will be held on Wednesdays from 12:30pm to 2pm, and our two C-term meetings will be held on Wednesdays from 11am to 12:30pm.

On behalf of the entire faculty, **Prof. Richman** expressed confidence in Prof. Heinricher as he steps in again as Interim Provost.

#### 3. President's Report

**President Wang** thanked Prof. Heinricher for his commitment to WPI and his readiness to serve as Interim Provost.

**President Wang** explained that the recent Supreme Court ruling on affirmative action requires that those making admission decisions can have no access to any racial information about any applicant. However, it is entirely lawful for us to work to develop a diverse pool of students who apply to WPI for admission. It is also essential that all our students, regardless of their backgrounds, feel supported when they are on our campus.

**President Wang** thanked those faculty members who have participated in her listening sessions and have given their feedback on WPI's strategic priorities, which have been shared with the Board for their input and which align with our strategic plan.

The first strategic priority is to drive transformative STEM education. For fiscal year 2024, we will focus on the implications of generative and applied AI for our degree programs and for the future of the workforce. In this context, President Wang thanked the Business School for the developing the FinTech program, which is already attracting external recognition. Led by Dean Camesano and Provost Heinricher, we will also formulate a clear strategy for our graduate education programs over the next decade or two.

The second priority is to provide an immersive student experience through the entire student life cycle. In this context, we will explore ways to open the enrollment pipeline to create a large, diverse applicant pool. We have

also begun a process of campus framework planning for the next ten years, which will enhance the campus experience by utilizing physical spaces and place-making to facilitate interactions among students. Input should be provided to Eric Beattie (VP of Campus Planning and Facilities), Phillip Clay (VP Student Affairs), and Mike Horan (CFO).

The third priority, led by Bogdan Vernescu (VPR), is to increase our high-impact, purpose-driven research. We will focus on how to increase our large-scale, highly interdisciplinary, high-impact research activities, which will help WPI reach a new level as a research university with impact. The fourth priority is to foster belonging and inclusion. We will focus on welcoming and supporting our students and their wellness through the entire student life cycle. The fifth priority is to power a financially robust, strategic financial institution. We will implement a budget planning process that is well-aligned with our priorities, and we will aggressively increase our fundraising efforts.

**President Wang** explained that next year we will formulate different actions under the same five priorities, and she asked everyone to help to formulate these actions together.

**President Wang** added that she has been meeting with Lauren Turner (SVP T&I), Prof. Richman (SOF), and Prof. Heineman (Chair, COG) to ensure that the search process for the search for the permanent provost follows WPI's Faculty Handbook, and to formulate questions to be posed at upcoming campus listening sessions to gain insights into the priorities for and the qualities we seek in a new provost.

#### 4. Committee Business

Committee on Tenure and Academic Freedom (CTAF) and Committee on Governance (COG):

**Prof. Heineman** (CS; COG Chair) and **Prof. Doyle** (SSPS; former CTAF Chair) reported on behalf of the Academic Freedom Working Group. This ad-hoc committee, formed at the end of last year, includes three former Chairs of CTAF, former Provost Soboyejo, and the current Chairs of CTAF and COG and was convened to formalize a process to resolve allegations of academic freedom violations. Prof. Heineman noted that WPI and other institutions guarantee academic freedom (as defined in the Faculty Handbook) without retaliation. At WPI, CTAF is responsible for reviewing problems involving the academic freedom of individual faculty members that arise for both tenured and non-tenure track faculty. CTAF is charged with endeavoring to verify the facts of the case, yet the Faculty Handbook offers very few details regarding procedure to be used. (See Addendum #1 on file with these minutes.)

**Prof. Doyle** described the committee's summer work of listening sessions and thanked everyone who participated. He indicated that the committee is preparing a draft motion that it will bring to COG and to CTAF. Those committees will bring the motion to the faculty for discussion in November and for a vote as soon as possible afterward.

**Prof. Doyle** laid out the guiding principles that had been developed in May by CTAF, COG, the Administration and the Office of General Counsel. These include the following: the violation of academic freedom must be based on the definition of academic freedom in the Faculty Handbook; an informal resolution should be possible before a formal proceeding; input must be sought from all relevant parties before issuing a decision; nonretaliation must be guaranteed in all respects; remedies proposed should be appropriate for the individual case; and confidentiality must be protected throughout the process.

**Prof. Doyle** explained the committee's attempt to strike a balance so that faculty aren't discouraged from bringing a complaint, all evidence is confirmed, and the procedures apply to all faculty members. The proposed four-phase process begins with a consultation with the Chair of CTAF for informal advice to help the individual understand whether they have a case and the process to follow. If they decide to submit a complaint, there would be an opportunity for a mediated informal resolution. If no such resolution is agreed to, the case moves to an investigation involving a review of the evidence provided by the faculty member and interviews of people agreed to by the faculty member. If, based on this evidence, CTAF concludes that a violation may have taken place, it would then work to confirm the facts. Finally, if the facts supporting the academic violation are confirmed, then the process moves to a resolution. Currently there is no resolution except for tenure-track faculty, who can be put up for early tenure. For other faculty, the motion includes a management plan developed by the Provost and CTAF so the administration can take action to protect the person's academic freedom.

**Prof. Shue** (CS) asked if the committee has seen case studies from AAUP or other sources that would clarify the differences between violations and non-violations of academic freedom. He thought the Chair of CTAF could share such resources with a faculty member during the initial consultation and/or an individual could read these materials before consulting CTAF. **Prof. Doyle** agreed that the committee could look for such examples, although he pointed out that the examples collected by AAUP, for example, would probably be the most egregious violations.

**Prof. Demetry** (MME) encouraged the working group to look very carefully at what academic freedom means and how it might be violated. She explained that the few WPI cases that she was aware of may not have been recognized as academic freedom violations (in teaching, scholarship, and citizenship), and yet they rightfully went forward. She pointed out the difficulty of finding clarity because it is not feasible to create a list of violations. **Prof. Doyle** indicated that the motion will provide some guidance that a violation brought to CTAF should be serious. **Prof. Heineman** added that for the violation for CTAFs consideration should rise above an annoyance to something that has potentially derailed that faculty member's professional development.

**Prof. Boudreau** (HUA) asked Prof. Demetry if her concern was that a faculty member might not see that their own academic freedom had been violated, or that CTAF would have difficulty identifying a violation. **Prof. Demetry** said that both were concerns. Prof. Boudreau expressed her confidence in the members of CTAF, whom the faculty elect and traditionally rely on to discern whether the criteria for tenure are satisfied. **Prof. Doyle** pointed out that in the case of academic freedom complaints, the infrequency of cases makes it important to provide future CTAF members with more guidance.

**Prof. Hansen** (HUA) asked if there are other institutions that have good procedures that could be models for us, especially to clarify the boundaries within which academic freedom violations fall. **Prof. Heineman** referred to benchmarking that had been done by Prof. Claypool, who found that many faculty handbooks are silent or do not provide detailed procedures. **Prof. Doyle** expressed some caution about benchmarking exercises for WPI, which has, for example, an unusual faculty governance system and a very different type of tenure system.

**Prof. Boudreau** (HUA) asked if any of the guiding principles may be mutually exclusive on some occasions. She asked, for example, how we can make ensure that collecting information from all relevant parties doesn't open up the possibility of retaliation. **Prof. Heineman** pointed to the development of a management plan which in principle would be designed to protect the faculty member after a positive finding. **Prof. Boudreau** asked if there were protections against retaliation within the process. **Prof. Doyle** agreed that the principles could conflict. To address this concern, the process as drafted starts out with very few people involved to avoid retaliation or conflict. And it expands as needed in a way that protects against retaliation for as long as possible in the process, at which point the management plan, overseen by the Provost, would be designed to protect from retaliation.

**Provost Heinricher** agreed that the fear of retaliation is real and that protection against retaliation needs to be universal. In his view, the best protection against retaliation is the visibility of the process.

**Prof. Richman** asked a specific question about how the management plan would be enforced if the allegation were against the Provost, and a general question about how to ensure that those responsible for overseeing the management plan were independent of those responsible for the academic freedom violation. **Prof. Heineman** and **Prof. Doyle** explained that appropriate substitutes could be designated either when any party designated as part of the process was also a party to the case or when any such party had a general conflict of interest unrelated to the case.

**Prof. Richman** encouraged all those with an interest in the developing process to provide their feedback to any member of the Academic Freedom Working Group, COG, or CTAF.

#### Committee on Information Technology Policy (CITP):

**Prof. Smith** (CS, CITP Chair), on behalf of the Committee on Information Technology Policy, presented CITP's draft motion to revise WPI's Mailing List Policy. She explained that the policies that govern mailing lists are important to the faculty because we conduct much of our business and interact to a significant extent with one another and with our students by email. (See Addendum #2 on file with these minutes.)

**Prof. Smith** described the three types of mailing lists: large standing distribution lists (e.g., “dl-faculty,” “dl-undergraduate,” “dl-graduate”); advising mailing lists (“adv-”); and individually created groups (“gr-”). She explained that the motivation for these revisions is CITP’s discovery in recent years of challenges to both resources and security in the use of mailing lists. Many lists are inaccurate or outdated and have no designated person to maintain them; some large lists see heavy traffic and ambiguous list management; many obsolete lists remain; and there is no record of whether lists are opt-in or opt-out and who determines the membership policy for the list. In the absence of information about list moderators and practices, the IT Service Desk receives - but is not equipped to respond to - many inquiries and requests to be added or removed from lists. In short, CITP has discovered a lack of policy guidance on list moderation, list practices, and record keeping about the purpose and oversight of lists.

**Prof. Smith** also pointed out that the current mailing list policy was created by the Information, Security, Risk and Compliance Committee (ISRC), which no longer exists. The policy was established without any faculty governance involvement and is outdated, confusing, and without committee oversight.

**Prof. Smith** gave an overview of the proposed revised policy: it establishes common terminology and rules for list creation and deletion; it updates definitions of mailing lists to be consistent with WPI’s current community practices and IT systems; it defines a list owner with authority over mailing list usage, moderation, and membership; it establishes responsibilities for IT regarding mailing list maintenance and support; and it defines list owners as offices rather than individuals (to maintain continuity of ownership).

**Prof. Shue** (CS) thought that the Computer Science Department, for example, should be able to moderate the list for its own majors. He added that the CS Department has recently reduced several problems by doing so. **Prof. Smith** pointed out that no single moderation rule would necessarily work equally well for every department, and the proposed policy would allow department-by-department flexibility.

**Michelle Borowski** (Assistant Registrar) asked how the offices overseeing the student mailing lists (dl-students, dl-undergraduate, and dl-graduate) would be determined. **Prof. Smith** replied that currently dl-undergraduate is moderated by SGA, dl-graduate is moderated by GSG, and dl-students (a required announcement distribution list) is moderated by the Dean of Students. She noted that CITP is in discussion with various offices on campus to determine list ownership where there is no clear owner.

**Prof. Ahrens** (CS) asked if the policy specifies who to contact with questions about mailing lists. **Prof. Smith** explained that according to the policy a record of list owners would be maintained and would be accessible to IT. Inquiries could then be brought to the IT Service Desk, who would identify the list owner.

**Anna Gold** (University Librarian) asked if the staff have been contacted regarding their needs with mailing lists. She also asked if deleting a mailing list would also affect work being stored in Microsoft Team's files. **Prof. Smith** wasn’t sure about the degree to which the two could be separated. **Sia Najafi** (Associate CIO) indicated that messages in Teams are archived for two years, so there is that level of back up.

**Dean Gericke** (Interim Dean, UGS) asked if, due to the need for rapid delivery of certain messages, certain individuals could be identified with the ability to circumvent the list moderator. **Prof. Smith** agreed to look into this question further.

**Prof. Sturm** (MA) expressed his concern with the prohibition against the use of personal aliases. He pointed out that such aliases allow people to avoid problems created by names that are difficult to spell. **Prof. Smith** explained that CITP has so far avoided adding rules about aliases to the draft of the Mailing List Policy, but she offered to bring this very legitimate concern back to CITP.

#### 5. New Business

There was no new business.

#### 6. Provost’s Report

**Provost Heinricher** thanked all those who provided their well wishes as he again fills the Interim Provost position. He reflected on the character of WPI by sharing an observation by one of our students that, yes, WPI is a very competitive place, but we compete with important problems, not with each other. Provost Heinricher concluded by

thanking the Academic Freedom Task Force whose work over the summer and since then has been an impressive collaboration.

7. Closing Announcements

**Prof. Richman** reminded all those in attendance that our next faculty meeting will be held on a Wednesday, (November 8) at 12:30PM rather than at our traditional day and time.

8. Adjournment

The meeting was adjourned at 4:35pm by **Prof. Richman**.

Respectfully submitted,

Mark Richman  
Secretary of the Faculty

**Addenda on file with these minutes:**

Addendum #1 - CTAF-COG Presentation on Academic Freedom Violation Resolution Process - Minutes - Oct 5, 2023

Addendum #2 - CITP Draft Mailing List Policy - Minutes - Oct 5, 2023

Note: This item is for discussion only.

**Date:** November 8, 2023

**To:** WPI Faculty

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

**Re:** Motion to establish a formal procedure to resolve faculty allegations of academic freedom violations

**Motion:** The Committee on Governance recommends, and I move that the Faculty Handbook be modified by adding a new CHAPTER TEN, Section IV: Procedure for Complaints of Academic Freedom Violations, and by modifying CHAPTER ONE, BYLAW THREE and CHAPTER THREE, Section 2.c.ii, as described below.

**Updated version for insertion in the Faculty Handbook:**

**Red** text is to be added and ~~striketrough~~ text is to be removed.

**Description of Proposed Changes:**

1. Revise CHAPTER ONE, BYLAW THREE, Section II

The Committee on Tenure and Academic Freedom

(**Red** text is to be added and ~~striketrough~~ text is to be removed.)

....

CTAF is also concerned with questions relating to academic freedom, and the committee is charged with the responsibility of reviewing problems involving the academic freedom of all faculty members, – whether **they are tenured, non-tenured,** ~~faculty,~~ **whether full-time, or part-time or full-time.** In ~~these cases~~ **when faculty members allege that their academic freedom has been violated,** the Committee on Tenure and Academic Freedom shall ~~endeavor to verify the facts of the academic freedom case. At the start of any such academic freedom case, CTAF shall consider whether any of its members should be recused due to direct conflict of interest. If a Committee member is recused, the review of the academic freedom case will proceed with the remaining members.~~ **follow the process described in CHAPTER TEN, Section IV.**

....

2. Revise CHAPTER THREE, Section 2.c.ii:

Early Tenure Review when the Academic Freedom of the Faculty Member is in Serious Jeopardy

(**Red** text is to be added and ~~striketrough~~ text is to be removed.)

CTAF has the responsibility of reviewing problems involving the academic freedom of ~~both all~~ **faculty members – whether they are tenured, and non-tenured faculty, whether full-time, or part-time or full-time.** In ~~these cases~~ **when faculty members allege that their academic freedom has been violated,** the Committee on Tenure and Academic Freedom shall ~~endeavor to verify the facts of the academic freedom case. At the start of any such academic freedom case, CTAF shall consider whether any of its members should be recused due to direct conflict of interest.~~



~~If a Committee member is recused, the review of the academic freedom case will proceed with the remaining members.~~ follow the process described in CHAPTER TEN, Section IV.

In the event that CTAF is unsuccessful in having the parties reach an informal resolution of the academic freedom allegations and determines that the academic freedom of a tenure-track faculty member has been violated, the committee shall invite the faculty member to apply for tenure and shall in any case recommend tenure (and, in the cases of assistant professors and assistant professors of teaching, promotion to the corresponding associate rank) only when there is good evidence that the nominee would eventually be tenured by the normal procedure. Otherwise, the case is tabled and the faculty member is notified personally by the Chair of CTAF.

At the start of any such tenure case, CTAF shall consider whether any of its members or any members of the Department Tenure Committee should be recused due to direct conflict of interest. If a CTAF or DTC member is recused, that member either will be replaced in a manner determined by CTAF or the review will proceed with the remaining members.

The procedures otherwise to be followed in the tenure review and the granting of tenure (and, in the cases of assistant professors and assistant professors of teaching, promotion to the corresponding associate rank) will be, to the extent possible without exposing the faculty member to further jeopardy, those followed in a normal tenure case, including promotion to the associate rank when the faculty member is at the assistant rank.

3. Add new CHAPTER TEN, Section IV  
Procedure for Complaints of Academic Freedom Violation  
(Beginning on the next page...)

## CHAPTER TEN: FACULTY CONDUCT POLICIES

### Section IV. PROCEDURE FOR RESOLVING COMPLAINTS OF ACADEMIC FREEDOM VIOLATION

#### I. Context

All faculty members at WPI – whether tenured, non-tenured, full-time, or part-time – have academic freedom as described in CHAPTER ONE, Section II, Part V of this Handbook. The guarantee of academic freedom requires that any faculty member who believes their academic freedom has been violated must be able to submit and have their complaint adjudicated by the Committee on Tenure and Academic Freedom (CTAF) without incurring any additional risk. The procedures described below are designed to allow CTAF to ascertain the facts needed to reach a decision with respect to allegations of academic freedom violations, while protecting faculty members from harm during the process. CTAF will endeavor to move through the process in timely fashion.

Any faculty member who believes their academic freedom has been violated may submit a complaint to the Committee on Tenure and Academic Freedom (CTAF), which has responsibility to follow the procedures described below to evaluate whether an individual's academic freedom has been violated. It is not CTAF's responsibility to assign intentionality or to sanction any individual. However, if CTAF determines that academic freedom has been violated, CTAF will send a detailed report on the finding with recommendations to the Provost. Based on the report, it is expected that the Provost will take appropriate administrative actions as necessary.

#### II. Evaluation of Complaints of Academic Freedom Violation

A violation of academic freedom is any serious interference, restriction, or suppression of the rights and liberties that arise from the definition of academic freedom (provided in Chapter 1, Section II, Part V). These rights enable faculty members as scholars, educators, and citizens of the University to pursue and disseminate knowledge and ideas without undue influence, censorship, or discrimination. CTAF shall endeavor to ascertain the facts of the academic freedom case using the procedures described below. At all times, case materials will be confidential, shared only among the members of the academic freedom subcommittee (AFS) chosen to evaluate the case and the faculty governance coordinator.

##### II.a Initial Phase

1. **Optional Informal Consultation:** The Chair of CTAF is available for informal consultation with the complainant at any time before formal procedures are initiated (beginning with step 2, below). At this time, the Chair can review evidence provided, discuss the complaint with the complainant and answer questions about the complaint process. There is no investigation and no involvement of other parties at this time. Instead, the intent is to provide a mechanism by which the complainant may receive information that may help them to decide whether or not to submit a formal complaint, although the complainant may submit a formal complaint without asking for this consultation. An oral or informal written inquiry from the complainant is not considered a formal complaint for the purposes of these rules. All information shared and discussed during this informal consultative phase must remain confidential between the complainant and the Chair of CTAF.

If the complaint involves the Chair of CTAF or if the complainant is in the same department as the Chair of CTAF, then the complainant should consult with the secretary of CTAF, who will play the role of the Chair throughout the process.

2. **Submission of a Formal Complaint:** To initiate a formal complaint of academic freedom violation for consideration by CTAF, the complainant must notify the Chair of CTAF (or their replacement)

in writing that they intend to submit a complaint. To ensure a fair and effective resolution process, cases should be filed in a timely manner. Within two weeks of that notification, the complainant must submit the following: a) a signed, written statement describing the substance and details of the complaint; b) any evidence they wish to have considered to support the allegation that their academic freedom has been violated; c) an initial list of people relevant to the case whom the complainant agrees may be interviewed by CTAF; and d) a statement of any potential conflicts of interest relevant to the case that may exist among current members of CTAF.

3. *Selection of the Academic Freedom Subcommittee (AFS)*: The CTAF Chair (or their replacement) and the next longest serving CTAF member (who is not in the same department as the complainant and does not have a conflict of interest) will perform an initial review of the submission in order to select a five-member academic freedom subcommittee (AFS) consisting of themselves and three additional members CTAF members who have neither departmental overlap with the complainant nor conflicts of interest in the case. The five members of the AFS will elect their own Chair.

The AFS will investigate cases of alleged violations of academic freedom as soon as possible, constrained by CTAF's Fall tenure case workload and the availability of CTAF members to serve on the AFS.

4. *Possible Mediation and Informal Resolution*: The AFS will review the materials submitted and interview the complainant.

If the AFS decides the case does not have merit, the complainant will be informed by the AFS Chair in writing of the decision, the case is closed, and no further action is required by CTAF.

If the AFS decides the case may have merit, the AFS will offer, but not require, the complainant an opportunity to pursue a satisfactory informal resolution through mediation between the complainant and any individual(s) identified as being potentially responsible for the alleged violation. The AFS Chair decides whether the Provost needs to be involved in the mediation process. Only if the complainant agrees, is/are these identified individual(s) notified of the complaint and at this stage are invited to participate in the opportunity for mediation. Because mediation is voluntary, all parties must agree to participate for mediation to occur.

Mediation is a voluntary, confidential process through which a neutral mediator assists the complainant with expressing their concerns, and in assisting all parties in developing solutions to the dispute in a safe and structured environment. The Secretary of the Faculty shall serve as the mediator or will appoint an appropriate mediator (in consultation with the AFS Chair). The individual who serves as mediator shall be acceptable to the complainant and these identified individual(s). Mediators do not make judgments, determine facts, or decide the outcome; instead, they facilitate an appropriate exchange between the participants, who identify the solutions best suited to their situation. Mediators do not engage in evaluation of decisions.

If the parties come to an informal resolution of the dispute through mediation, the mediator documents the mediation process and the details of the agreed-upon resolution. No agreement from the mediation process is reached unless and until it is acceptable to all parties. This document is signed by the mediator and all parties. The fact that a mediated resolution was agreed upon is conveyed to CTAF in writing, but without any other details. The case is closed, and no further action is required by CTAF. The parties in the dispute are responsible to each other for ensuring that the provisions of the agreement are followed. Failure by any party to

abide by the terms of the mutual resolution will allow the complainant to reopen the case with CTAF.

5. *Proceeding in the Absence of a Mediated Resolution*: In the event that the parties do not agree to mediation or are not able to reach a mutual resolution to the dispute through mediation, the AFS will, at the request of the complainant, proceed with the Investigation Phase (**Section II.b**).

## II.b Investigation Phase

1. *Review of Submitted Materials*: The AFS shall evaluate the complainant's submitted materials (described in section II.a.2) and interview the complainant. The complainant may ask for an advisor of their choice to be present during the interview and advisors are subject to the same confidentiality obligations application to others in this process. The AFS may choose to interview some or all of the individuals identified by the complainant on the initial list of people relevant to the case whom the complainant agrees may be interviewed.
2. *Possible Request for and Review of Additional Materials*: The AFS may also request additional materials, including emails, annual reviews, or other documents *from the complainant* if such materials are necessary to verify the facts.

If at any point in the investigation the AFS decides that additional interviews and/or additional information *from other individuals* not initially provided by the complainant **are necessary** to come to a *preliminary finding* (see Section II.c.1), the AFS will provide the complainant with a list of the additional individuals and information that are required. AFS cannot contact any individuals without the written approval of the complainant during this stage of the investigation.

If the complainant is not willing to expand the scope of the investigation in this manner, then AFS will make a **negative decision** that the available evidence in the case does not establish that an academic freedom violation occurred.

If the complainant is willing to expand the scope of the investigation, the AFS conducts additional interviews, reviews the additional information requested, and continues to evaluate the full body of evidence. At all times, the parties shall cooperate with the process, preserve (and not delete or destroy) evidence, and provide information and materials as requested.

3. *Confidentiality*: All case materials will remain confidential and will not be shared with any other interviewees. Case materials will be shared only among members of the AFS and the faculty governance coordinator.
4. *Option to Request Mediation and Informal Resolution*: The complainant has the option to withdraw their complaint at any time during the investigation phase and request an information resolution, following the process Section II.a.4.
5. *Option to Withdraw the Complaint*: The complainant has the option to withdraw their complaint at any time during the investigation phase. Should the complainant request to withdraw the case, the AFS will issue no finding and the complainant's case will remain confidential. The case is closed and no further CTAF action is required.

6. Sufficient Evidence: Once the AFS has enough evidence to reach a preliminary finding, the process enters the decision phase.

## II.c Decision Phase

1. Preliminary Finding: Based on all the evidence obtained in the order and manner described in **Section II.a.2** and **Section II.b**, the AFS deliberates and reaches a *preliminary finding* by majority vote regarding whether (a) the faculty member's academic freedom **has not been violated**; (b) there is **not enough evidence** to confirm the faculty member's academic freedom has been violated; or (c) have enough evidence that academic freedom **likely was violated**.
  - a. Has not been violated: If the initial finding is that academic freedom **has not been violated**, the complainant will be informed by the AFS Chair in writing of the decision and the rationale for the decision. The case is closed and will remain confidential, no additional reports will be filed, and this academic freedom case shall not be resubmitted in the future. No further CTAF action will be taken.
  - b. Not enough evidence: If the initial finding is that there is **not enough evidence** to confirm the faculty member's academic freedom has been violated, the complainant will be informed by the AFS Chair in writing and the case will be closed and will remain confidential; This academic freedom case could only be resubmitted with new evidence of the alleged academic freedom violation that did not exist during the initial investigation. No further CTAF action will be taken.
  - c. Likely was violated: If the initial finding is that academic freedom **likely was violated**, the complainant will be informed by the AFS Chair in writing of additional relevant parties (as determined by the AFS) that need to be interviewed or additional information that needs to be confirmed. These relevant parties have not yet been interviewed in order to protect the complainant. The complainant will have one calendar week to decide whether to withdraw the case or proceed and will inform the AFS Chair in writing of their decision:
    - i. Withdraw and Request Mediation and Informal Resolution: The complainant can decide to withdraw the case and request an information resolution, following the process Section II.a.4.
    - ii. Withdraw the Case: The complainant can decide to withdraw the case, and the case will be closed and will remain confidential; no further CTAF action will be taken.
    - iii. Proceed: If the complainant still wishes to proceed, the case cannot be withdrawn after this point.
2. Confirmation of Preliminary Finding: If there are additional relevant parties (as determined by the AFS) who have not yet been interviewed (so as to protect the complainant), the AFS will conduct those interviews and review any relevant materials that are identified through those interviews. The purpose of this additional step is for the AFS to ascertain whether this additional evidence may help establish **and confirm** that an academic freedom violation occurred. If any identified relevant parties choose not to be interviewed by AFS, the process continues to the next step.
3. All Relevant Parties will be offered the opportunity to be interviewed and to provide evidence prior to a final decision:
4. Final Decision: When the AFS has completed interviewing all relevant parties and reviewing any additional evidence, the AFS takes a final vote and based on a majority vote arrives at either a

**positive decision** that an academic freedom violation occurred, or a **negative decision** that the evidence in the case does not establish that an academic freedom violation occurred.

- a. Negative Decision: If the final vote results in a negative decision that the evidence in the case does not establish that an academic freedom violation occurred, then the complainant will be informed by the AFS Chair in writing of the decision and the rationale for the decision. The case is closed and will remain confidential. The AFS issues a detailed, confidential report that is shared with the complainant, with the suggestion that the complainant share the report in confidence with the Provost. No further CTAF action will be taken.
  - b. Positive Decision: If the final vote results in a positive decision that an academic freedom violation occurred, then the AFS Chair informs the complainant in writing of the decision, produces a detailed report of the finding, and advances the case to the resolution phase.
5. Confidentiality: The existence of this academic freedom case – as well as the process followed and the final outcome – must remain confidential. This applies to the complainant, the members of the AFS, and all those interviewed during the process.

### **III. Resolution of Confirmed Violations of Academic Freedom**

Upon confirmation of an academic freedom violation, the goal of the resolution is to protect the faculty member, provide information about the process and finding to all relevant parties, and produce a plan that can help prevent academic freedom violations in the future. It is not CTAF's responsibility to assign intentionality or to sanction any individual.

1. Recommended Actions: Based on information from the case, the AFS shall recommend possible corrective actions to rectify the academic freedom violation, if possible; protect the complainant against possible retaliation; and prevent similar academic freedom violations in the future, if possible. Such recommended actions may include but are not limited to changing the complainant's direct supervisor, extending the terms of a contract, and providing regular oversight for the complainant and supervisor, as appropriate.
2. Special case for probationary tenure-track faculty in addition to Recommended Actions. If the complainant is a probationary faculty member consistent with the minimum time that must be served on a probationary appointment prior to the tenure review (described in Academic Appointments, Section 3.a.i and in Tenure, Section 1), the procedures in Section III.2.a are followed before proceeding with Section III.3. The procedures are intended to help mitigate any damage that might have resulted from the academic freedom violation and to initiate appropriate interventions intended to address conditions that may have led to the violation.
  - a) Procedures for Probationary Tenure-track Faculty Members. In cases in which the AFS finds that the academic freedom of a probationary faculty member has been violated, the complainant will be invited to apply for tenure in the subsequent Fall semester to protect the faculty member from retaliation or ongoing harm from the initial violation. In this tenure process, CTAF shall seek to include and evaluate as many of the components of a normal tenure case as possible, without undue jeopardy to the faculty member's confidentiality in the academic freedom case. CTAF shall recommend for tenure if there is good evidence that the nominee would eventually be tenured by the normal procedure.

All parties to the case shall endeavor to maintain the strictest confidentiality regarding the existence of the case and to expedite their role in the case to the maximum extent possible. The procedures otherwise to be followed in the tenure review and the granting of tenure

(and, in the cases of assistant professors and assistant professors of teaching, promotion to the corresponding associate rank) will be, to the extent possible without exposing the faculty member to further jeopardy, those followed in a normal tenure case, including promotion to the associate rank when the faculty member is at the assistant rank. Appendix A contains details about the revised process.

3. Complete Confidential Report with Recommendations: The AFS issues a detailed, confidential report and recommendations to the Provost, providing information on the finding, the procedures followed, the materials considered in the academic freedom case, and recommendations from steps 1 and 2a, if appropriate, of this section (**Section II.d.1 and 2**). Upon receiving the report, the Provost must meet with the AFS to discuss the case. The discussion between the Provost and the AFS can include materials disclosed during the investigation that may not have been included in the report. All aspects of this discussion are confidential between the AFS and the Provost. After such a meeting, the AFS may choose to revise the recommendations in the report.
4. Provost Produces Management Plan: The Provost produces a management plan in response to the report. The plan details protective actions taken for the complainant, corrective actions taken, if any, to any relevant parties, and a timeline for implementation, as appropriate. The Provost is encouraged to consider actions that ensure non-retaliation against the complainant, with appropriate oversight and safeguards (and sanctions, if necessary) described in the plan.
5. Delay Process for Probationary Faculty who had applied for tenure: In cases where the Provost recommends that the probationary faculty member be granted tenure, the Provost shall pause the resolution phase until the Board of Trustees has voted on the Provost's positive tenure recommendations.
6. Share Management Plan: The Provost sends the report and management plan first to the AFS, and then the parts of the report that pertain to the complainant and all relevant parties.
7. Enact Plan and Provide Updates until Plan Completed: The Provost takes appropriate action following the management plan and submits an annual statement to the Chair of CTAF affirming that the management plan's requirements are being met, until the completion of the plan. At that time, the case is closed, and no further action is required by CTAF.

## **Appendix A: Details of Revised Tenure Process for Probationary Tenure-track Faculty Members**

If the candidate decides to accept the invitation to apply for tenure, a Joint Tenure Committee will be formed according to normal procedure as long as neither elected member of the Department Tenure Committee nor the Department Head is directly involved in the academic freedom complaint. Where one (or more) of the three members of the DTC has been directly involved in the academic freedom complaint, a modified Joint Tenure Committee will be formed consisting of 5 members of CTAF and 3 departmental colleagues, with the most recent past DTC member substituting for the member that is recused because of involvement with the academic freedom case. Members of the JTC that were not members of the AFS that reviewed the initial academic freedom complaint must be informed of the special nature of the case but shall not be given any details of the academic freedom case. This includes members of the DTC but may also include CTAF members where the CTAF membership of the JTC is different than the AFS. All members of the JTC shall keep the existence of the academic freedom case and the resulting tenure case confidential.

A modified procedure will be used to seek external reviews. Members of the modified DTC will seek commitments from senior faculty members (at the rank of associate professor or above) from outside WPI who are able to evaluate the candidate's tenure dossier. The DTC will specifically seek external reviewers similar to those who would have been chosen in a standard tenure case. Reviewers will be given a general explanation of the unusual situation (without providing any details or naming any parties involved in the academic freedom case), along with copies of WPI's tenure criteria and an explanation of how early tenure cases should be evaluated in cases of academic freedom violation. Details of the tenure case will only be sent to external reviewers who agree in advance to keep the case in complete confidentiality, including from all members of the WPI community other than the JTC and the faculty governance coordinator. External reviewers will not be given any details about the academic freedom case.

No departmental interviews will be conducted. The candidate may choose to request letters from some departmental colleagues, other than DTC members, as part of their professional associate letters.

The JTC will deliberate and reach a decision to either table the early tenure application or recommend for tenure. If the decision is to table the case, the candidate is notified in writing by the CTAF member who served as the Chair of the JTC and the candidate will be eligible in the future to apply for tenure under the normal tenure process. All details about the academic freedom case shall remain confidential.

If the JTC's decision is to recommend for early tenure, it will provide a unitary recommendation to the AFS, written by the CTAF member who served as the Chair of the JTC and signed by all members of the JTC. The AFS will then sign the recommendation and send it to the Provost. While the Provost can consult with the appropriate Dean and the President, the existence of the academic freedom case will remain confidential from the Board of Trustees.

The Provost may ask to meet with the JTC to discuss the recommendation and the Provost must meet with the JTC in the case of a disagreement about a tenure recommendation. Any such discussion between the Provost and the JTC is about the tenure case only, does not involve the AFS, does not include materials or issues regarding the academic freedom violation, and is confidential between the Provost and the JTC only.



### **Rationale:**

The Faculty Handbook clearly states that all members of the WPI faculty, whether they are tenured, are on the tenure track during their probationary period, or hold secured or short-term nontenure-track appointments, have academic freedom as defined in Chapter One, Section 2 of our constitution. This includes full freedom in research and in the publication of the results, freedom in the classroom with relation to the subject being taught, and freedom from institutional censorship or discipline. As such, WPI faculty are guaranteed non-retaliation with respect to appointment decisions and other conditions of employment for exercising the full range of academic freedom in all their contributions to the University including participation in its governance. Their right to express their views without reprisal is secured by access to all procedures described in the Faculty Handbook (Chapter One, Section 2):

*All members of the WPI Faculty, whether they are tenured, are on the tenure track during their probationary period, or hold secured or short-term nontenure-track appointments, have academic freedom as defined in this Constitution. As members of the WPI Faculty, they are guaranteed non-retaliation with respect to appointment decisions and other conditions of employment for exercising the full range of academic freedom in all their contributions to the University including participation in its governance. Their right to express their views without reprisal is secured by access to all procedures described in this Faculty Handbook.*

The WPI Handbook clearly states that (Chapter Three, Section 2.c.ii) “CTAF has the responsibility of reviewing problems involving the academic freedom of both tenured and non-tenured faculty, whether part-time or full-time. In these cases, the Committee on Tenure and Academic Freedom shall endeavor to verify the facts of the academic freedom case.”

Nevertheless, procedures for adjudicating cases of potential academic freedom violations are missing. Specific details on academic freedom procedures only appear in the context of grievances (Chapter Five) considered by the Faculty Review Committee (FRC). If the grievance arises from non-renewal of a tenure-track appointment prior to tenure review and alleges infringement of academic freedom (Section IV), either prior to the decision or in the process surrounding the decision, the FRC shall first request a finding on that issue from CTAF.

As for CTAF, the only investigation and resolution of potential academic freedom violations described in the Faculty Handbook are only if the academic freedom of a probationary tenure track faculty is in serious jeopardy (Chapter 3, Section 2.c.ii) and, in this case only, CTAF shall “verify the facts” and may invite the candidate to submit for early tenure review. No other investigation or resolution details are specified. CTAF and COG feel it is important to specify procedures and remedies for all faculty covered by principles of academic freedom.

The Association of Independent Technological Universities (AITU, <https://theaitu.com/about-aitu/>) consists of twenty schools: Carnegie Mellon University, Case Western Reserve University, Clarkson University, Embry-Riddle Aeronautical University, Florida Institute of Technology, Franklin W. Olin College of Engineering, Illinois Institute of Technology, Kettering University, Lawrence Technological University, Massachusetts Institute of Technology, Milwaukee School of Engineering, New York Institute of Technology, NYU Tandon School of Engineering, Rensselaer Polytechnic Institute, Rochester Institute of Technology, Rose-Hulman Institute of Technology, Stevens Institute of Technology, the Cooper Union, and the Webb Institute. A survey of these schools found that 35% do not have a faculty handbook available and 40% have

a faculty handbook but do not specify procedures for investigating alleged cases of academic freedom. The remaining 25% have procedures that are not suitable for WPI.

There is a need, and an opportunity, to rectify the lack of procedural details on investigating alleged cases of academic freedom, while also providing guidance on resolving any confirmed cases. CTAF and COG believe it is important that all interested parties have advance knowledge of the detailed processes that will be followed in an academic freedom case.

In Spring 2023, CTAF defined Guiding Principles for CTAF Cases Alleging Violation of Academic Freedom, which were affirmed by the WPI administration, the Office of General Counsel and the Board of Trustees. These principles are enumerated below, each tagged with a three-letter code:

- [INF]** Before a formal proceeding is initiated, with the permission of the complaining faculty member, CTAF should work with the Provost to encourage and assist the parties to reach informal, mutually agreeable resolutions of disputes involving alleged violations of academic freedom.
- [ALL]** Before deciding whether there has been a violation of academic freedom, CTAF is encouraged to seek input and evidence from persons CTAF believes may have information relevant to the alleged violation.
- [AFD]** An allegation of a violation of academic freedom shall be based on the definition of academic freedom in the Faculty Handbook.
- [NRT]** A faculty member alleging a violation of academic freedom is guaranteed nonretaliation in all respects. Any individual who engages in retaliation shall be subject to disciplinary action up to and including termination of employment.
- [REM]** In cases where there has been a finding of a violation of academic freedom, CTAF should consider recommending remedies appropriate for the individual case (e.g., for probationary faculty, tenured faculty, faculty working on a secured contract, and adjunct faculty).
- [CNF]** Throughout the process, confidentiality of all parties must be protected, and information must be shared only on a need-to-know basis.

In summer 2023, a working group was formed to add procedures for alleged violations of academic freedom to the faculty handbook. The working group was approved by CTAF and includes the Provost (Wole Soboyejo), three former chairs of CTAF (Jim Doyle, SSPS) (Lauren Mathews, BBT) (Mark Claypool, CS), the current chair of CTAF (Kris Wobbe, BBT), and the current chair of COG (George Heineman, CS).

During the summer, the working group held listening sessions with different constituencies: the academic deans, department heads, office of general counsel, faculty governance, and a number of non-administrative faculty groups, including “untentured, tenure-track”, “tenured”, “secure contract”, and “any non-administrative.”

Based on what was heard during these sessions, the working group drafted the procedures in this motion. The procedures aim to strike a balance: 1) avoid a procedure that deters complainants with credible cases from coming forward; 2) ensure all evidence is confirmed before a final ruling; and 3) provide remedies that are applicable to all faculty members. The following table indicates how the guiding principles for cases of alleged violation of academic freedom are met

by the four phases proposed in this motion:

	AFD	INF	ALL	NRL	REM	CNF
Initial	✓	✓				✓
Investigation	✓		✓		✓	
Decision	✓		✓		✓	
Resolution				✓	✓	✓

A checkmark (✓) indicates that phase of the proposed procedures specifically addresses the indicated principle.

The initial, investigation and decision phases all refer to the definitions of academic freedom as lens through which to consider any alleged violation of academic freedom. The initial phase provides a method to encourage and assist the parties to reach informal, mutually agreeable resolutions of disputes involving alleged violations of academic freedom before a formal proceeding is initiated.

The investigation and decision phases both provide an opportunity and necessity to interview all relevant parties and review all relevant information before a ruling that that an academic freedom violation occurred.

The resolution phase – specifically the Provost’s management plan, based on recommendations by CTAF – provides a mechanism for actions that ensure preventing non-retaliation against the complainant, with appropriate oversight and safeguards (and sanctions, if necessary).

The resolution phase's management plan also provides possible corrective actions appropriate for the faculty member’s position (i.e., probationary, tenured, secure contract, or adjunct faculty).

All phases provide for confidentiality safeguards similar to those practiced by CTAF and the administration during tenure deliberations.

**Date:** November 8, 2023  
**To:** WPI Faculty  
**From:** Committee on Graduate Studies and Research (Prof. Olson, Chair)  
**Re:** Motion to establish an M.S. program in Global Health

**Motion:** On behalf of the *ad hoc* Committee on Global Health, the Committee on Graduate Studies and Research recommends and I move that an M.S. program in Global Health be established, as described below, and it be coordinated by the faculty members identified below in the departments of Biology and Biotechnology, Biomedical Engineering, Computer Science, Integrative and Global Studies, Social Science and Policy Studies, as well as in the Interactive Media and Game Development, Bioinformatics and Computational Biology, and System Dynamics programs, and in the School of Business.

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

#### **Proposed Modifications to Graduate Catalog:**

##### **Program Goals and Objectives**

The M.S. degree in Global Health focuses on the application of technical knowledge to design and solve global challenges in equity, access, and innovation in healthcare research, discovery, and delivery. The program leverages WPI's strengths in the social sciences, biomedical and systems engineering, computational sciences, data analysis and modeling, mobile applications, and business systems management as well as our substantial global presence in project centers in more than 34 countries. Graduates will benefit from WPI's strengths at the intersection of science, technology, and society, and will gain leadership skills and experience in global health solutions.

The M.S. in Global Health is designed to prepare students to contribute to the growing field of global health through study, research and practice that places a priority on improving health and achieving equity in healthcare access for all people worldwide. The distinctive WPI approach to this field applies technology, data science, and innovative solutions to bringing good health to all people wherever they live. The program balances core fundamental concepts in global health, training in methods with a technical specialization, and a graduate project or practicum within four specific concentrations that take advantage of the unique skills and global expertise that currently exist at WPI. The four concentrations include: 1) Global Health Management and Assessment; 2) Analytics and Modeling in Global Health; 3) Mobile Applications for Global Health; and 4) Engineering Solutions for Global Health. The program requires 30 credits.

Core requirements for all concentrations include Perspectives on Global Health (3 credits), Research Design Methods for Development (3 credits), Collaborations for a Better World Seminar Series (0 credits) which we suggest to be taken during the first semester and encouraged to continue throughout their academic coursework, and a Graduate Qualifying Project (GQP 6 credits) that is completed as a practicum with a health-related organization or company, either in the US or at one of WPI's Global Project Centers and university research partner sites around the world. The practicum builds on the strong and lasting partnerships that faculty have fostered with non-governmental organizations, government agencies, and medical research institutions across the world, where our graduate students can complete internships.

##### **Degree Program Requirements**

The M.S. in Global Health requires 30 credits.

Each of four available concentrations includes the overarching core degree requirements that are the scaffolding for integrating the elements of the program: one core course in Perspectives on Global Health (3 credits), and one core course in Research Design Methods for Development (3 credits), one core seminar entitled Collaboration for a Better World (0 credits) plus a Graduate Qualifying Project (6 credits) completed as a practicum at a health-related site (e.g., labs, hospitals, companies, NGO's, etc., either locally

or at an international site including one of our Global Project Centers). In addition to this core, each concentration has a tailored choice of 9 credits of other required courses relevant to that Concentration, and a slightly more open selection of 9 credits of electives. Any core elective not chosen can serve as an elective. The concentrations include:

**Concentration 1: Global Health Management and Assessment (30 credits)**

This concentration includes courses in areas such as Program Management, Managing Complexity, Project Dynamics, Operation Management, and electives such as Teaming and Organizing for Innovation. It also incorporates social entrepreneurship through electives such as Ethics and Social Justice in Development, and Social Innovation and Global Development. This concentration is for students interested in business or development studies as well as those interested in large scale program evaluation and assessment who want to elevate their degree with a Global Health focus and better understanding of the challenges in operations and management of global healthcare systems.

**Required core courses for all concentrations (12 credits):**

- IGS502 Perspectives on Global Health (3 credits)
- DEV540 Research Design Methods for Development (3 credits)
- IGS555: Collaboration for a Better World Seminar Series (0 credits)
- IGS595 Graduate Qualifying Project (6 credits)

**Choose 3 core courses for this concentration (9 credits):**

- MIS576 Program Management (3 credits)
- SD553 Model Analysis and Evaluation Techniques (3 credits)
- SD562 Project Dynamics (3 credits)
- SD550 System Dynamics Foundation: Managing Complexity (3 credits)
- BUS500 Business Law, Ethics, and Social Responsibility

**Choose 3 general elective courses for this concentration (9 credits):**

- BUS500 Business Law, Ethics, and Social Responsibility
- IGS510 Human Dimensions of Global Environmental Change
- MIS573 System Design and Development
- MIS584 Business Intelligence
- OBC505 Teaming and Organizing for Innovation
- OIE549 Sustainable Supply Chain and Operations Management
- OIE501 Operations Management
- OIE542 Operations Risk
- OIE558 Designing and Managing Lean Six Sigma Processes
- SS510 Principles of Epidemiology

***Concentration 1: Outcomes for Global Health Management and Assessment***

- Understand key challenges in global health that require better management and assessment of complex systems.
- Knowledge of the basic principles and tools of management across diverse cultural domains.
- Develop a team approach to managing large projects whether in a non-profit environment, government or industry setting in global or rural environments.
- Gain skills in managing complexity, risk, and dynamic systems in relation to global health.
- Develop skills to manage people and programs in teams as well as through cooperative agreements.

**Concentration 2: Analytics and Modeling in Global Health**

This concentration provides an introduction to data and model analysis (including data mining, data science, applied statistics, and model analysis), along with courses in Biology and Epidemiology. It

also includes electives in areas such as Bioinformatics, Data Visualization, Systems Dynamics, and Machine Learning for Applications. This concentration is for students interested in an introduction to quantitative methods and data analytics and applying these skills to challenging problems in global health.

**Required core courses for all concentrations:**

IGS502 Perspectives on Global Health (3 credits)  
DEV540 Research Design Methods for Development (3 credits)  
IGS555 Collaborations for a Better World Seminar Series (0 credits)  
IGS595 Graduate Qualifying Project (6 credits)

**Choose 3 core courses for this concentration (9 credits):**

DS517 Mathematical Fundamentals for Data Science  
SD553 Modeling Analytics and Evaluation Techniques  
DS501 Introduction to Data Science  
SS510 Principles of Epidemiology  
IGS505 Qualitative Methods for Community Engaged research

**Choose 3 elective courses for this concentration (9 credits):**

MA511 Applied Statistics for Engineers and Scientists  
SD550 System Dynamics Foundation: Managing Complexity  
CS5007 Introduction to Programming Concepts.  
CS582 or BCB502 or CS573 Data Visualization  
CS542 Database Management  
IGS510 Human Dimensions of Global Environmental Change  
MIS573 System Design and Development  
ETR500 Entrepreneurship & Innovation  
SD500 Introduction to System Dynamic  
BCB501 Bioinformatics  
BCB 504 Statistical Methods in Genetics and Bioinformatics  
DS595: Machine Learning for Engineering and Science Applications  
SD553 Model Analyses and Evaluation  
BUS500 Business Law, Ethics, and Social Responsibility  
MA 547 Design and Analysis of Observational and Sampling Studies  
MA 542 Regression Analysis  
MA 559 Time Series Analysis

***Concentration 2: Outcomes for Analytics and Modeling in Health and Disease***

- Understand key challenges in global health that would benefit from data analytics, modeling and other new techniques in machine learning and AI.
- Interpret results of data analysis for health research, policy or practice.
- Understand key global health policies surrounding data privacy, transferability, and accessibility.
- Analyze quantitative and qualitative data using biostatistics and computational methods and tools, as appropriate.
- Select quantitative and qualitative data collection methods appropriate for a given global health context.

**Concentration 3: Mobile Applications for Global Health**

This concentration builds primarily on programs in Computer Science and Interactive Media and Game Design including courses in Ubiquitous Computing, Human-Computer Interaction, Interactive Design, and Serious and Applied Games. It also includes electives in areas such as Data Visualization, Artificial Intelligence and Design, Entrepreneurship, and Innovation amongst others. This concentration is for

students with backgrounds in computing, gaming, design, and AI in Design where there are exciting frontiers opening in applications for Global Health.

**Required core courses** for all:

- IGS502 Perspectives on Global Health (3 credits)
- DEV540 Research Design Methods for Development (3 credits)
- IGS555 Collaborations for a Better World Seminar Series (0 Credits)
- IGS595 Graduate Qualifying Project (6 credits)

**Choose 3 core courses for this concentration** (9 credits):

- CS5007 Introduction to Applications of Computer Science
- IMGD5300 Design Interactive Experience
- CS 528 Mobile and Ubiquitous Computing
- CS546 Human-Computer Interaction
- CS582 or BCB502 or CS573 Data Visualization
- IMGD5500 Serious and Applied Games

**Choose 3 elective courses for this concentration** (9 credits):

- BCB581 Bioinformatics
- CS582 or BCB502 or CS573 Data Visualization
- IMGD 5010 IMGD Fundamentals
- IMGD 5100 Tangible and Embodied Interaction
- CS540 Artificial Intelligence in Design
- CS534 Artificial Intelligence
- CS542 Database Management
- CS5003 Foundations of Computer Science
- MIS502 or MIS587 Business Applications for Machine Learning
- OBC505 Teaming and Organizing for Innovation
- ETR500 Entrepreneurship & Innovation
- BUS500 Business Law, Ethics and Social Responsibility

### ***Concentration 3: Outcomes for Mobile Applications for Global Health***

- Understand key challenges in global health that would benefit from mobile applications and from approaches to interactive and serious gaming.
- Identify the human factors involved in software app design process.
- Create solutions based on an iterative process that incorporates human factors and user-centered design processes as it relates to specific global environment.
- Develop safe and effective mobile apps for use in global health care delivery and disease prevention.
- Ability to apply human factors design principles to global health care app and game development to help in the delivery of effective technologies tailored to the end-user's environment.

### **Concentration 4: Engineering Solutions for Global Health**

This concentration has a focus on biomedical device design and regulation, as well as aspects of physical, chemical, and environmental engineering that are relevant to human health. It includes electives in topics such as water chemistry, physical and chemical treatment, and biomaterial for medical devices each representing a technology area which has a focus on Global Health. This concentration is for students with a background in engineering studies or other technical background, who want to elevate their degree with a Global Health focus to better understand and address the challenges for engineering solutions in diverse global contexts, including how to work in settings with institutional and cultural diversity.



Required core courses for all:

- IGS502 Perspectives on Global Health (3 credits)
- DEV540 Research Design Methods for Development (3 credits)
- IGS555 Collaborations for a Better World Seminar Series (0 credits)
- IGS595 Graduate Qualifying Project (6 credits)

Choose 3 core elective courses for this concentration (9 credits):

- BME 531 Medical Device Design
- BME 532 Medical Device Regulation
- ETR 500 Entrepreneurship & Innovation
- BME 592 Healthcare Systems and Clinical Practice (credits 1) +
- BME 533 Medical Device Innovation and Development (1 credit)
- DEV530 Ethics and Social Justice in Development

Choose 3 elective courses for this concentration (9 credits):

- BME 532 Biomedical Instrumentation
- CE 560 Adv. Water Treatment
- CE561 Advanced Principles of Wastewater Treatment
- CE563 Industrial Waste Treatment
- CE590 Environmental Health and Engineering
- CE 572 Physical & Chemical Treatment Process
- BME560 Physiology for Engineers
- IGS510 Human Dimensions of Global Environmental Change
- MIS576 Program Management
- OIE505 Teaming and Organizing for Innovation
- BME Mechanobiology
- ETR 593 Technology Commercialization
- SS 510 Principles of Epidemiology
- BUS500 Law, Ethics and Social Responsibility

#### ***Concentration 4: Outcomes for Engineering solutions for Global Health***

- Understand key challenges in global health that require better engineering solutions.
- Develop tools for health care and medical device integration in diverse settings and global contexts.
- Develop new devices and equipment for improving health care in remote or developing regions of the world.
- Develop skills, knowledge, and mindset necessary to collaborate with community partners to address engineering solutions for global health challenges.
- Understand the interaction of technology, society, and environment in the innovation process.

#### **Graduate Qualifying Project (GQP): Practicum**

A student's Plan of Study must be approved by the Global Health program director in consultation with the Faculty Advisory Committee. A GQP proposal must be submitted to and approved by the program coordinator in consultation with the students' academic advisor and recorded by the program director. The GQP is to be carried out in cooperation with a sponsoring organization or affiliated research lab or a laboratory on or off campus which is engaged in Global Health research. The GQP coordinator in consultation with the faculty of record is responsible for supervising the project and ensuring that the project has sufficient rigor and formative content for graduate-level work.

Internships may focus on applied projects in hospital, health management agencies, health research, or nonprofit settings, or within governmental or non-governmental health organizations, although projects could also be completed in a research laboratory. Students will produce a written report at the



conclusion of the project. The format for the report—which is significantly shorter and less formal than a thesis—will be determined by the student’s advisor. Students will also be encouraged to present their work to the faculty in a public presentation. A copy of the report will be kept with the program director.

***Outcomes for the Required Graduate Qualifying Project (Practicum)***

- Develop a Global Health project related to the selected concentration from design through implementation phases.
- Develop the awareness of cultural values and practices to the design or implementation of health policies or programs in diverse settings and intercultural contexts.
- Practice professional communication and ethical conduct.
- Demonstrate awareness of issues of diversity, equity and inclusion in global health management, policy, and data analytics.

**Sample Plans of Study**

**3-Semester Plan**

First Semester	Second Semester	Summer Term	Third Semester
IGS 502 Perspectives on Global Health (3 credits) or DEV540 <i>Research Design Methods for Development</i> (3 credits)  IGS 555 Collaborations for a Better World Seminar Series (0 credits)	IGS 502 Perspectives on Global Health (3 credits) or DEV540 <i>Research Design Methods for Development</i> (3 credits)	IGS 595 Graduate Qualifying Project (6 credits)	One additional course from concentration requirement list (3 credits)
One additional course from concentration requirement list (3 credits)	One additional course from concentration requirement list (3 credits)		One additional course from the Electives list (6 credits)
One additional course from the Electives list (3 credits)	One additional course from the Electives list (6 credits)		
<b>9 credits total</b>	<b>9 credits</b>	<b>6 credits</b>	<b>6 credits</b>

**4-Semester Plan**

First Semester	Second Semester	Third Semester	Fourth Semester
IGS502 perspectives on Global Health (3 credits)  IGS 555 Collaborations for a Better World Seminar Series (0 credits)	DEV540 <i>Research Design Methods for Development</i> (3 credits)		IGS 595 Graduate Qualifying Project (6 credits)
One additional course from concentration requirement list (3 credits)	One additional course from concentration requirement list (3 credits)	One additional course from concentration requirement list (3 credits)	
One additional course from the Electives list (3 credits)	One additional course from the Electives list (3 credits)	One additional course from the Electives list (3 credits)	
<b>9 credits total</b>	<b>9 credits</b>	<b>6 credits</b>	<b>6 credits</b>

### **Admissions Requirements**

Students applying to the M.S. Degree in Global Health are expected to have a bachelor's degree in areas related to the four concentrations, or a minor in Global Health, or some direct experience in the field. A strong applicant who is missing background coursework as needed for course requirements may be admitted, with the expectation that he or she will take and pass one or more undergraduate courses in this area of deficiency either during the summer prior to admission or within the first semester after admission. These remedial courses will not count towards meeting the M.S. degree requirements. The determination of what course or courses will satisfy this provision will be made by the Global Health Faculty Advisory Committee, which consists of faculty members from the participating departments at WPI. Students who are not WPI undergraduates or graduates will be required to submit GRE and international students will submit TOEFL scores.

Students must complete a minimum of 30 credits of relevant work at the graduate level. The M.S. degree requirements have been designed to provide comprehensive yet flexible program concentrations to students who are pursuing an M.S. degree exclusively, and students who plan to pursue a Ph.D. degree later. Matriculated students will meet with the program director and be assigned a faculty advisor matching their concentration interests. In consultation with the academic advisor, the student will prepare a Plan of Study outlining the selections that will satisfy the M.S. degree requirements. This Plan of Study must then be approved by the Global Health director in consultation with Faculty Advisor.

### **Program Management**

As an interdisciplinary degree, the degree program will be administered by The Global School and involving faculty from all four schools and several departments. Management is envisioned as three levels of engagement which includes the Global Health program director (identified), a faculty advisory committee (identified) consisting of faculty in the core required course, and at least 1 member in each of the concentrations (identified). The student's advisor is a member of the faculty identified. In year two of the program an external advisory committee will be established to provide advice, career opportunities for students and links to networks for faculty and student research and funding opportunities. A GQP coordinator will be appointed to assist students in fulfilling the project requirement.

### **Global Health Program Director**

Oates, Karen [koates@WPI.EDU](mailto:koates@WPI.EDU)

### **Global Health Advisory Committee**

Emmanuel Agu (CS), Diana Alatalo (BME), Laureen Elgert (DIGS), Lane Harrison (CS), Rob Krueger (SSPS), Tsitsi Masvawure (DIGS), Solomon Mensah (BME), Reeta Rao (BBT), Carolina Ruiz (CS), Michael Radzicki (SSPS), and Diane Strong (Business).

### **Global Health Faculty**

Agu, Emmanuel ([CS](#))  
Alatalo, Diana ([BME](#))  
Bergendahl, John (CEAE)  
Billiar, Kristen (BME)  
Elgert, Laureen (DIGS)  
Faber, Brenton (HUA/BME)  
Harrison, Lane (CS)  
Johnson, Sharon (SOB)  
Krueger, Robert Krueger (SSPS)  
Mathisen, Paul ([CE](#))  
Masvawure, Tsitsi (DIGS)

Mensah, Solomon (BME)  
Oates, Karen (BBT)  
Paffenroth, Randy (DS/ MATH)  
Radzicki, Michael (SSPS/ DS)  
Rao, Reeta (BBT)  
Rodriguez, Angela (SSPS)  
Ruiz, Carolina (CS/DS/BCB)  
Rundensteiner, Elke (CS/DS)  
Ryder, Elizabeth (BBT/BCB)  
Smith, Gillian (IMGD)  
Strauss, Sarah (DIGS)  
Strong, Diane (SoB)  
Weathers, Pam (BBT)  
Walcott, Sam (Math/ BCB)

### **Rationale**

A Faculty Task Force in Arts & Sciences first began designing an interdisciplinary program in Global Health for this emerging field in 2019. This motion has now revisited the academic rationale and Market Analysis for this program, which is stronger than ever (attached). With administrative support based in The Global School as part of a portfolio of interdisciplinary global graduate programs, a cross-school and cross-departmental faculty committee will implement this program. It will be led by a program director, Karen Kashmanian Oates (Biology), and an inter-departmental faculty advisory committee from all four Schools: Emmanuel Agu (CS), Diana Alatalo (BME), Laureen Elgert (DIGS), Lane Harrison (CS), Rob Krueger (SSPS), Tsitsi Masvawure (DIGS), Solomon Mensah (BME), Reeta Rao (BBT), Carolina Ruiz (CS), Michael Radzicki (SSPS), and Diane Strong (Business).

The pandemic put an immense burden on our global healthcare infrastructure, our supply chains, and our workforces in healthcare, here at home and in every country. WPI has a unique opportunity to leverage its STEM education at the interface with Global Health challenges to generate transformative innovations that can advance equity and inclusion in good health and well-being around the world. WPI can excel in training the next generation of increasingly diverse STEM students to have meaningful future careers where *new technologies* interface with *human needs* and *global health challenges*.

There is substantial and increasing transdisciplinary overlap in the knowledge base and skills essential to the field of Global Health. Global Health management and practice increasingly relies on innovations in data analytics, computation, mobile data, biomedical engineering innovation, and other technologies such as artificial intelligence (AI) in which WPI has extensive expertise. At the same time, practitioners also require situated knowledge of public health, cross-cultural literacy, global policy studies, and qualitative social science methodologies.

This distinctive new Master's in Global Health will differentiate WPI as a national leader in immersive and integrative global health STEM and experiential education. The MS in Global Health will have four concentrations in Global Health Management and Assessment, Data and Modeling for Global Health, Mobile Applications for Global Health, and Engineering Solutions for Global Health. WPI's excellence in global project-based experiential education, integrating science, technology, and society through immersive real-world research in diverse communities of practice, brings a distinctive element to this program that other comparable programs lack.

This will be a key addition to WPI's portfolio of interdisciplinary global graduate programs that embed advanced technical training in STEM disciplines with interdisciplinary social science, experiential learning, and a project-based practicum at one of our Global Project Centers. Possibilities include the University of Johannesburg, South Africa; American University of Armenia, Yerevan Armenian; University of Ghana, Accra, Ghana; University of Puerto Rico – Medical Sciences Campus, San Juan, Puerto Rico; along with

partners such as UMass Medical Center, Worcester Department of Health, and our own WPI research laboratories to name a few.

Students in all concentrations will complete a common set of core courses introducing them to global health challenges and qualitative methodologies, in addition to completing 3 courses specific to each concentration and 3 elective courses relevant to their selected concentration. Each student will also complete a graduate qualifying project (GQP) in their area of study, working with an organization operating in the global health arena. The practicum may be done locally or in a global location but must be related to a current problem in global health. A faculty advisor along with a GQP practicum coordinator will help students select courses and a practicum relevant to their personal goals and objectives in enrolling in the program.

The Global Health Master of Science degree aligns with WPI's strategy and has been endorsed by the Deans of all four Schools involved and departments are currently reviewing the proposal. Appendix A list the departments which have reviewed and are not in opposition to the new degree and have endorsed the program. The proposal aligns with pursuing purpose-driven education, building our international visibility, and expanding diversity, equity, and inclusion. By offering students the option of fulfilling their practicum requirements at one of WPI's Global Project Centers, we can utilize our existing successful network while creating further synergies and strengthening our international partnerships.

Interactions with prospective students and current students have taught us that many are interested in both building a major in a specific STEM field and working in an interdisciplinary area utilizing their discipline to support global problem solving. This interdisciplinary degree program offers a valuable addition to any STEM degree, with a clear market differentiation and specialization. Technology can play a valuable role in advancing health equity, with a number of health equity symposiums in 2023 focusing on diversity, inclusion and technology. Bringing together technical training and knowledge with more qualitative and applied approaches to understanding health in diverse global contexts will be a hallmark of this program. In addition, this program offers an opportunity to diversify WPI's student body and broaden the applicant pool at the master's degree level, because the health professions tend to attract more female students and more students from under-represented groups in STEM. The American Association of Medical Colleges, for example, reported an 18% increase in medical school applicants in 2021-22, with Black, Hispanic, and women applicants and enrollees all making gains in representation in the class (<https://www.aamc.org/news-insights/press-releases/medical-school-enrollment-more-diverse-2021>). Attracting more diverse underrepresented minorities into Global Health professions is crucial to advancing global health equity, as "greater diversity in the healthcare workforce is seen as a promising strategy for addressing racial and ethnic healthcare disparities by improving access to healthcare for underserved patients." (Wilbur et al. 2020).

### ***Opportunity and Market Analysis***

New technologies are impacting the delivery of healthcare globally, including trends such as remote telemedicine and virtual hospitals, personalized healthcare solutions and precision medicine, cloud-based health systems and data management, emphasis on preventive care and well-being, retail healthcare offered beyond the traditional clinic or hospital, and rising AI adoption for administrative duties and medical treatments. But technologies are only as good as the human systems with which they interact. Graduates in Global Health also need to be versed in the policies, regulations, and economic pressures that shape healthcare access globally, as well as having some knowledge of the cultural, political, and institutional variation that shapes unequal health access worldwide. WPI is perfectly poised for this mission.

With the growing need for health professionals with defined technical skills, WPI is uniquely positioned to provide – largely through our existing talent and coursework – highly in-demand graduates who can provide global health solutions at the intersection of innovative technologies and hands-on learning in local and global settings. WPI offers two unique qualities that are unmatched by other programs in Global Health: a) technical training in specific areas of global health technology including biology and biotechnology,

biomedical engineering, computer science, data science, management, and mobile health; and b) a network of Global Project Centers and international partnerships where students can conduct hands-on, real-world internships and research projects.

### ***Employment Trend***

Global or International Health is well positioned as a program, especially as a graduate program (Lightcast, 2023). Detailed market research was completed in January 2019, and updated again in 2023, which analysed industry needs, competition, and opportunities in this specific field. The need for healthcare specialists in every field is found to be growing, and the demand for global health experts with defined specializations has grown, especially since the COVID-19 pandemic has proven how vulnerable our global community is to such diseases. According to a recent Lightcast report from 2023, programs in health professions and related programs grew by 34% between 2017 and 2021.

Global Health with its technical component is a high growth field with a strong job market and career opportunities. The employment and demand for Global Health specialists has increased steadily, especially for graduates with the kinds of technical skills that WPI offers in data science, biomedical engineering, health system management, and mobile health and gaming. Our purpose-driven graduates will develop the next wave of mobile apps, AI-assisted machine learning, affordable biomedical devices, new systems for health management, and serious games for training global healthcare practitioners who are committed to equity, inclusion, justice, and transformative technology for social good. Our graduates will stand out from other competitors because they will be technical innovators and social entrepreneurs with real-world experience who can create the groundbreaking and accessible Global Health technologies of the future.

Market research by RNL predicts 26.6% growth in annual job openings over the next decade, and median salaries of \$94k to \$109k in this field, ideal for graduates with the kinds of technical skills that WPI offers in biomedical engineering, data science and AI, health system management, mobile health and serious gaming. This program will also be a platform for creating industry partnerships, for example with our partners at ZHAW in Zurich in areas such as Computational Life Sciences and Biotechnology within a Global Health setting.

The full initial report (2019) and the 2023 addendum are available.

### ***Comparison and Impact to Existing Programs at WPI:***

The program matches the quality and rigor of existing graduate programs at WPI, with 30 graduate credits required, including course work and a field-based practicum. At WPI there is already a minor in Global Public Health in the Social Science and Policy Studies department, with some faculty already offering courses, but there is clear room for defining a distinctive WPI footprint in this growing field by bringing together some existing fields with a new Global Health core. This MS degree program will synergize with our current efforts to build well-defined interdisciplinary graduate programs administered within the Global School as part of a strategic plan to build WPI's international profile, student recruitment, and research enterprise. It will expand our footprint in Global Health to include all WPI academic schools and programs, with participation from The Global School, Arts and Sciences, Engineering, and Business. Arts and sciences and the Global school share responsibility of the program director.

There are no existing Global Health related master's level programs at a graduate level at WPI. The proposed master's program in Global Health provides opportunities for many undergraduate majors. This program was developed as a grassroots efforts following a focus group and interviews with faculty from the following schools, departments, and program: Social Science and Policy Studies Department, Biology and Biotechnology Department, Computer Science Department, Mathematical Sciences Department, Biomedical Engineering department, IMGD Program, School of Business, Integrative & Global Studies Department, Bioinformatics and Computational Biology Program, and Data Science Program.

**Comparable Programs at other Universities:**

National programs related to Global Health were reviewed which included: Georgetown University, Tufts University, Notre Dame University, Northwestern University, Northeastern University, John Hopkins University, Duke University, Boston College, Simmons College, University of Massachusetts Amherst and Boston University. Market research suggested it is not necessary to offer an MPH to succeed in public health education. Evidence suggests a need for specialized education. The ability to cross-cut curriculum with an in-demand specialty has value in addressing the skills gap in this field. Conversely, an MS program has the ability to efficiently train professionals from STEM specialties to impart their knowledge in the global health market. Our program will be unique and distinctive because of its focus on global health solutions at the intersection of science, technology, and society. It offers both a deep social science methodology and technical training in applied global health solutions in four specific concentrations that is not found in other global health or related programs. A summary copy of this research is available upon request in both the Market Analysis reports and a Comparable Program document.

**Program Assessment:**

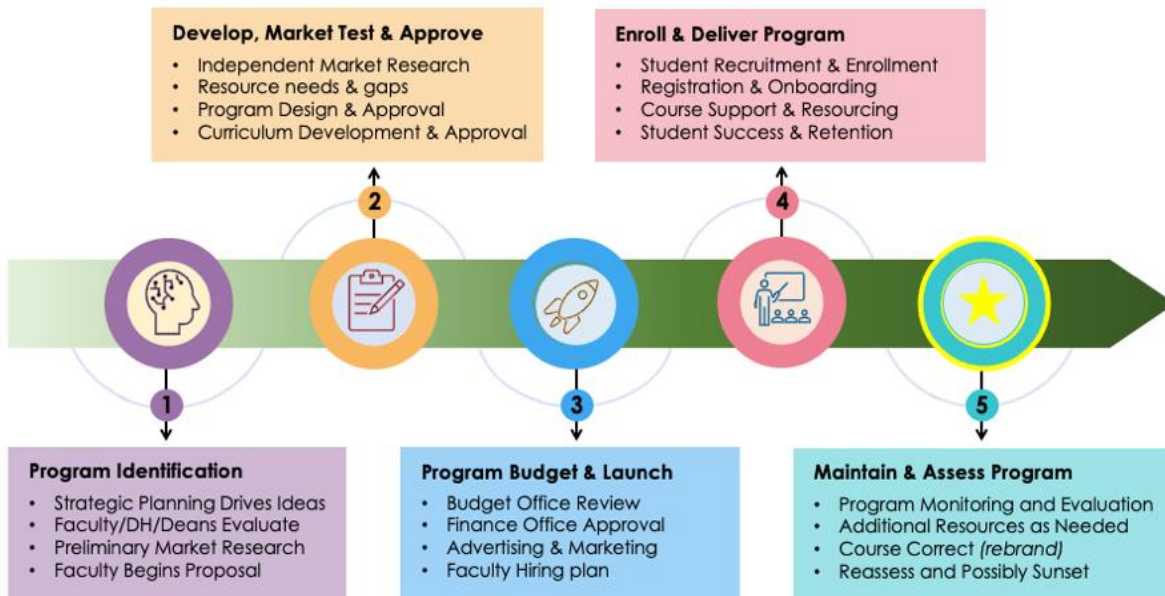
We plan to adopt a process of continuous program assessment proposed and spearheaded by Dean Sheller and Dean King along with a Faculty Advisory Committee (graphic representation below).

**First, during planning & prior to launch of the program**

- Market research (*completed*)
- Financial modeling (*completed*)
- Resource allocation (One new tenure-track faculty to teach Epidemiology/Biostatistics, to be hired in Math with affiliate appointments in Social Science and Policy Studies, and the Department of Integrative and Global Studies.
- Recruitment & Marketing (initial activities as approval process progresses)

**Then, after the program has been launched**

- Year 1- : Academic goals & objectives
- Year 2-4: + placement of recent graduates
- Year 4-5: + Financial review
- Year 6-: External review and evaluate future trajectory.





Academic assessment of the program will be done through review of the learning outcomes each year by the Faculty Advisory Committee. Additionally, the external advisory committee will review progress of each concentration annually, including enrollment, graduation rates, and other metrics. The faculty advisory committee will also assess the outcomes of GQP projects each year.

We intend to continue to grow and shape the program over time to increase its relevancy and attractiveness to both prospective students and to prospective employers. We plan to continuously assess the needs and interests of our student applicant pool and our existing student population. This will include interviewing students about their interests, their perception of our program, as well as tracking their subsequent employment.

**Implementation:**

Implementation date for this program is the 2024-2025 academic year. We hope to begin marketing by January 2024 and allow internal applicants to begin taking courses as well as recruit students by Fall of 2024 or earlier. In the future the Global Health Advisory Committee will plans, in collaboration with the specific departments to design BS/MS concentration options, along with articulation agreements that will allow for students at regional undergraduate institutions to transition easily from BA/BS degrees into the WPI Global Health MS degree.

**Resources Required:**

The programs resource request begins in year 1 (see assessment section above). We have been assured a full time faculty line in mathematical sciences by the provost (in writing) to begin recruitment in 2023-2024. This position will in part be responsible for the Epidemiology course. Currently the new graduate course is listed in Social Science and Policy Studies along with the undergraduate epidemiology course. Starting in year two a stipend is added for the program director and a search for a practicum coordinator will begin. Recent hires in several departments at WPI support the breadth of experience needed to launch and sustain the program until enrollment outgrown reserve capacity when, as standard for other programs, we will request appropriate hires. A projected proforma is found in Appenix B

**Appendix A    Departments/Programs Providing Letters of Support of or Non-opposition to the M.S. Degree Program in Global Public Health**

- School of Arts and Sciences
- School of Business
- School of Engineering
- Global School
- Computer Science
- Interactive Media and Game design
- Mathematical Sciences
- Social science and policy Studies
- Data Science
- Business Department
- Bioinformatics and Computational Biology
- Biomedical Engineering
- Biology and Biotechnology
- System Dynamics
- Integrative and Global Studies

## Appendix B: A predictive proforma financial plan

### Global Health *Estimated Budget: Cost Expectations and Revenue*

Description	Explanation	Cost-approx.	Year 1	Year2	Year 3	Year 4	Year 5
Part and Full time NTT – prog. support	Epidemiology Part / full time. BBT/Math/SSPS	6k per class – graduate and undergraduate	12K	6k	0	0	0
¼ time practicum coordinator	Practicum supervised by ¼ coordinator	Approx. 25k	0	22K	22K	22K	22k
Marketing	Outreach and digital marketing internal and external to WPI.	Approx. cost for new materials, regional advertising & pathways material	27K	27K	20k	20k	20k
Admin coordinator	A stipend of approximately 10K for the administration of GH degree	Year 1 the admin is in house and part of her responsibilities-	0	10K	10K	10K	10K
Possible / anticipated specialized teaching needs	As needed to support course growth and additional class offerings in pathways.	6k additional course needs- This is speculated/ projected. CS/ BME if needed	0	0	12k	18k	18k
ESTIMATED Totals cost	Estimated first 5 years cost		39k	65k	64k	70k	70k
<b>Approximate revenue-conservative</b>	<b>Based on 15 credits at approximately 1.7k per full costs credits</b>	<b>3 students /yr. 1 7 students/yr. 2 12 students/yr. 3 15 student/yr. 4 20 student/yr. 5</b>	76.5k	178.5k	306k	382.5k	510k
	<b>Cost base on 30 credits Full time and discounted</b>	<b>3 students /yr. 1 7 students/yr. 2 12 students/yr. 3 15 student/yr. 4 20 student/yr. 4</b>	117 k	273kk	468k	585k	780k

**Yearly Projected Profits 15 credits/year full cost    37.5K   113.5K   242K   312.5k   440K**  
**Yearly Projected Profit 30 credits discounted 23%    78K   208K   404K   515K   710K**



**Date:** November 8, 2023

**To:** WPI Faculty

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

**Re:** Motion to establish a STEM-certified MBA in Analytics and a new course BUS 594: Data-driven Business Strategy

**Motion:** On behalf of the Business School, the Committee on Graduate Studies and Research recommends, and I move that a STEM-certified MBA in Analytics (including one new course BUS 594 Data-driven Business Strategy) be added, as described below.

**Proposed Modifications to Graduate Catalog:**

*The following description will be added to the graduate catalog:*

**Program Goals and Objectives**

The STEM-certified Analytics MBA is designed for graduate business students early in their career who are interested in developing analytics capabilities and expect to move into starting managerial positions. The program will be STEM designated by the USCIS, thus opening a path to business analytics and managerial careers for international students.

- Equips students with analytic methods, tools, techniques needed for entry-level jobs at the intersection of analytics, strategy, business, and management.
- Enables students to interpret analytic results, draw insights to make strategic business decisions, and recommend additional analysis that could aid data-driven strategy formulation.
- Prepares students for the management jobs they will encounter early in their career, including project management and product management.

**Admissions Requirements**

No new additions to the admissions requirements section.

**Faculty Contacts:** Professors Purvi Shah, Bengisu Tulu, Jim Ryan, Renata Konrad

**Program Requirements:**

<b>CORE COURSES (Four courses)</b>
MIS 502 Data Management for Analytics
FIN 500 Financial Management
MKT 500 Marketing Strategy
OIE 501 Operations Management
<b>SPECIALTIES (18 Credits – Select two specialties of three courses each)</b>
<b>Applied Business Analytics (Select any 3 of the following):</b>
▪ FIN 540 Financial Analytics
▪ MIS 584 Business Intelligence
▪ MIS 587 Business Applications in Machine Learning
▪ MKT 568 Marketing Analytics
▪ OIE 552 Modeling and Optimizing Processes

<p><b>Data-driven Strategic Management (Select any 3 of the following):</b></p> <ul style="list-style-type: none"> <li>▪ BUS 546 Managing Technological Innovation</li> <li>▪ ETR 593 Technology Commercialization</li> <li>▪ MIS 576 Project Management</li> <li>▪ MKT 569 Product Management</li> </ul>
<p><b>Marketing Analytics:</b></p> <ul style="list-style-type: none"> <li>▪ MKT 568 Marketing Analytics</li> </ul> <p>Select two of the following:</p> <ul style="list-style-type: none"> <li>▪ MKT 561 Consumer Behavior and Analytics</li> <li>▪ MKT 562 Marketing Research</li> <li>▪ MKT 565 Digital and Social Media Marketing</li> </ul>
<p><b>Operations Analytics (Select any 3 of the following):</b></p> <ul style="list-style-type: none"> <li>▪ OIE 501 Operations Management</li> <li>▪ OIE 542 Risk Management and Decision Analysis</li> <li>▪ OIE 544 Supply Chain Analysis and Design</li> <li>▪ OIE 548 Performance Analytics</li> <li>▪ OIE 558 Designing and Managing Lean Six Sigma Processes</li> <li>▪ OIE 549 Sustainable Supply Chain and Operations Management</li> </ul>
<p><b>REQUIRED CAPSTONE COURSES</b></p>
<p>OBC 505 Teaming and Organizing for Innovation</p>
<p>BUS 594 Data-driven Business Strategy (Capstone)</p>

**New Course Descriptions:** No new courses are being added except the BUS 594 capstone course called *Data-driven Business Strategy*.

***BUS 594 Data-driven Business Strategy (3 credits)***

This is the Capstone project course for the STEM MBA program. The course content will introduce students to business strategy and integrate it with data-driven decision making. The course will involve a major team-based analytics project with an organizational sponsor. The project will involve both technical analytical skills and strategic thinking for formulating and implementing effective business strategies.

**Rationale:**

Overview:

We propose to launch a STEM MBA in the WPI Business School (WBS), with on-campus delivery. WBS has technically proficient faculty unlike most business schools, which makes us ideally positioned to launch a STEM MBA. In fact, we already have most of the appropriate courses. The proposed program is primarily a re-packaging of existing courses in the domain of analytics, business, and management. The program includes only one new capstone project course. The plan is also to get a STEM certification for this MBA which is appealing to international students who obtain additional time for job search post-graduation. Post pandemic, with fewer travel restrictions, WBS is now working towards recruiting international students to bring in more diversity in the classroom.

Why now?

The volume of digital data available to support business decision making has increased dramatically over the last decade. Businesses are using that data to make better decisions and to increase their excellence and competitive advantage through evidence-based marketing,

operations, financial, and strategic decisions. As a result, the demand for business students proficient in analytics has increased dramatically.

There is a large demand for individuals with knowledge of how to apply analytics to business problems (see market analysis). WBS offers the MS in Business Analytics program as a specialty masters to develop and hone skills in business analytics methods, tools, and techniques. This is an MS program with business applications of analytics. The Data Science (DS) program offered by WPI is focused primarily on DS tools or applying them to scientific applications. On the other hand, the proposed STEM MBA trains future managers in using this analytical information from business analysts to make data-driven strategic decisions. They will master these data-driven decision-making skills related to various business functions such as marketing, operations, finance, and strategic management. We identified this gap in the program offerings at WPI and WBS. To meet the needs of this specific set of students who are interested in data-driven strategic decision-making, with foundational knowledge of analytics tools and techniques, we are proposing to launch the STEM MBA, which offers a balanced blend of business, management, strategy, and analytics skills.

*Opportunity and Market Analysis:*

There is a growing demand for STEM focused business professionals who can drive strategic data driven decisions. This development is beneficial for our students – particularly our international students who obtain a better opportunity to work within the United States upon graduation. It is also beneficial for employers who can broaden their base of employment (see <https://pubsonline.informs.org/doi/10.1287/orms.2020.06.05/full/>). STEM MBA graduates are in high demand in emerging industries and startups, where there is a need for individuals who can develop and implement new technologies and strategies. These types of roles often require a combination of technical skills, business acumen, and innovation. Recognizing this trend, several institutions offer STEM designated MBA programs. Though the WPI Business School currently offers an MBA program (CIP Code 52.0201), it is an online program and is STEM focused but not designated by the USCIS (United States Citizenship and Immigration Services). With 1043 MBA programs offered under this CIP code and 105,796 completions, the landscape is very competitive and saturated with homogenous MBA programs. Responding to the global demand for a STEM designated MBA program that can be offered full-time and on campus, we believe that it would be attractive to focus on key strengths of the WPI Business School - the ability to combine business and analytical skills. We believe a STEM MBA (CIP Code: 31.7102) will complement our existing graduate analytics-focused programs and help build WPI's reputation as we prepare graduates to lead in strategic data driven decision making.

*Rationale for BUS 594:* This course will serve as a capstone project course for the proposed STEM-certified MBA in Analytics.

*Impact on Degree Requirements:* This course is a requirement for STEM-certified MBA in Analytics students to graduate.

*Resources and Anticipated Instructors:* We have a number of faculty qualified to teach the Capstone course, the only new course in this curriculum, including Purvi Shah, Sharon Johnson, and Nima Kordzadeh. For the selected professor, we will cover one of their existing courses with an adjunct. Otherwise, no new faculty are needed.

**Comparison to Existing Programs at WPI:**

The STEM MBA is not only different from other program offerings at WPI but also complements the existing programs at WPI. Please see Appendix A and B for a detailed comparison.

**Impact on Existing Programs at WPI:**

The impact of this program should be minimal on existing programs within WPI and WBS. The proposed STEM MBA program responds directly to a specific need for managers who are capable of applying data-driven insights into strategic decision making in various business functions. In this way, the STEM MBA will complement the Data Science, MBA, and Business Analytics programs offered by WPI.

**Comparable Programs at other Universities**

Typically, MBA programs are offered under the non-STEM CIP Code of 52.0201 - General Business Administration or the STEM certified CIP code of 52.1301 - Management Science. Neither of these CIP Codes align with the STEM focused offerings in WBS. WBS intends to take advantage of the Analytics CIP code newly introduced in 2020. The adoption of the CIP Code helps WBS differentiate its MBA program to allow students to specialize in Analytics Methods and Applications.

<b>CIP Code</b>	<b>STEM Certified</b>	<b>Number of Programs</b>	<b>Distance Education Offerings</b>	<b>Completions</b>
52.0201 - Business Administration and Management, General (Please see Appendix C)	NO	1,043	686	105,796
52.1301 Management Science (Please see Appendix C)	YES	196	75	15,708
30.7102 Business Analytics (Please see Appendix C)	YES	17	9	306

Source: Hanover Education Research Data Lab Report 2023

Please also refer to appendix D for a list of universities that offer a STEM MBA program with different concentrations (including Analytics).

**Implementation:**

*Program Management*

Like the online MBA offered by WBS, this program will also be the responsibility of the Graduate Policy and Curriculum Committee (GPCC) for WBS graduate programs, current chair Professor Purvi Shah. This committee will review changes to the program, student petitions, etc.

*Implementation Date*

Implementation date for this new program is the 2024-2025 academic year.

**Resources Required:** We have a number of faculty qualified to teach the Capstone course, the only new course in this curriculum, including Purvi Shah, Sharon Johnson, and Nima Kordzadeh.

For the selected professor, we will cover one of their existing courses with an adjunct. Otherwise, no new faculty are needed.

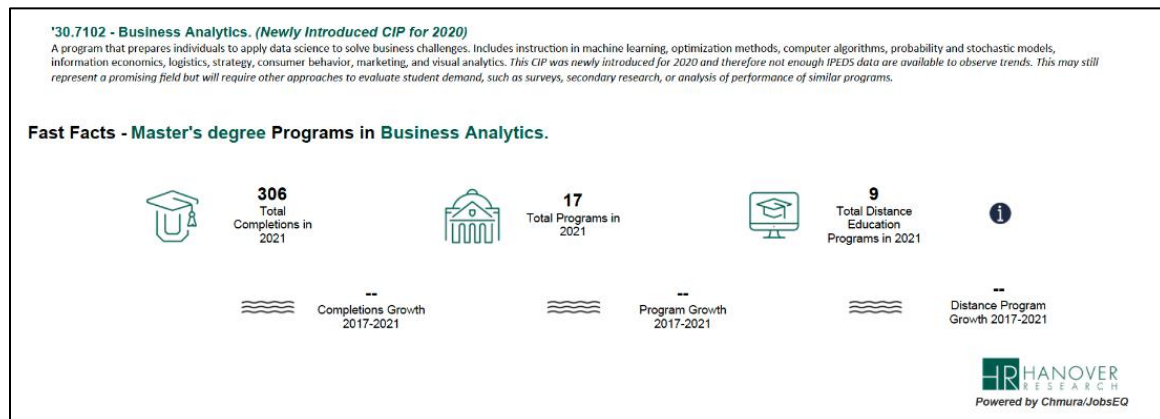
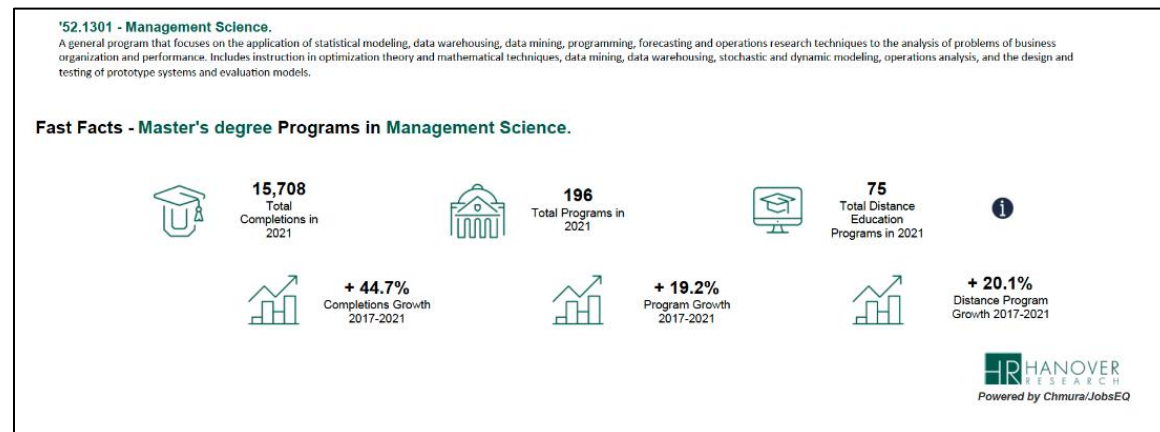
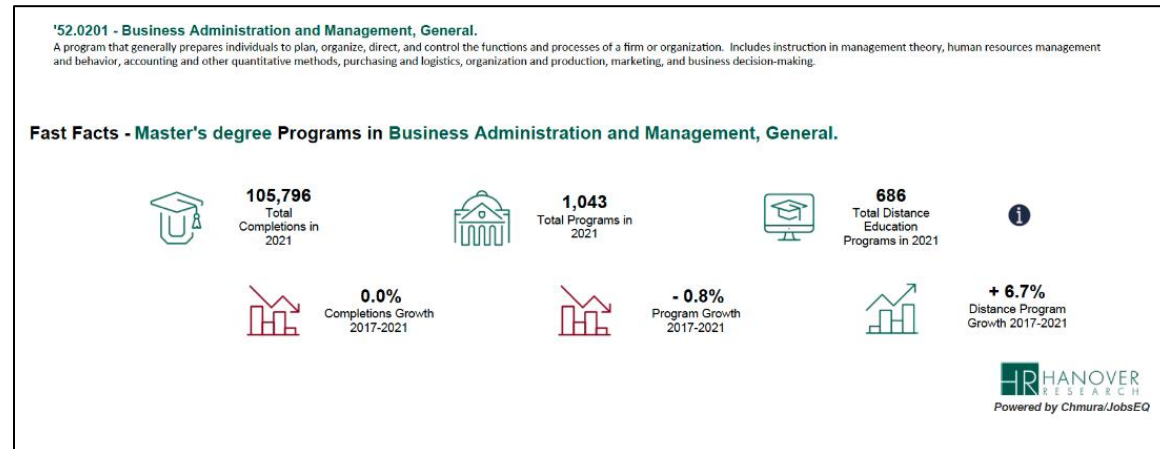
### APPENDIX A: Comparison of the proposed STEM MBA with other WPI programs

	STEM MBA	Online MBA	MSMG	MSBA	MSDS
<b>Focus</b>	MGT + STRAT + ANALYTICS	MGT + STRAT + SPECIALTY	GEN MGT	ANALYTICS (Business Applications)	DATA SCIENCE (Multiple Applications, mainly Technical, Scientific)
<b>Student Profile</b>	<ul style="list-style-type: none"> <li>▪ International students (mainly) + Domestic</li> <li>▪ No Work Exp</li> </ul>	<ul style="list-style-type: none"> <li>▪ Domestic students</li> <li>▪ 2+ Years Work Exp</li> </ul>	<ul style="list-style-type: none"> <li>▪ WPI BS students</li> <li>▪ BS/MS</li> <li>▪ No Work Exp</li> </ul>	<ul style="list-style-type: none"> <li>▪ International + Domestic students + BS/MS</li> <li>▪ No Work Exp</li> </ul>	<ul style="list-style-type: none"> <li>▪ BS - strong quantitative + computational BG</li> <li>▪ International+ Domestic students + BS/MS</li> <li>▪ No Work Exp</li> </ul>
<b>Credits</b>	36	36	30	33	30
<b>Core Courses</b>	4 Core	5 Core	8 Core	3 Core	5 Core
<b>Specialty</b>	Yes (6 courses)	Yes (5 courses)	No – 2 electives	Yes (6 courses)	No – 4 electives
<b>Capstone</b>	Yes (2 courses)	Yes (2 courses)	No	Yes (2 courses)	GQP or Thesis
<b>STEM-certified</b>	Yes	No	No	Yes	Yes
<b>Delivery</b>	On-Campus	Online	On-Campus	Online + On-Campus	Online + On-Campus

**APPENDIX B: Comparison with other related WBS Programs**

	STEM MBA (36 credits - 12 courses)	MSBA (33 credits - 11 courses)	Online MBA (36 credits - 12 courses)	MSMG (30 credits - 10 courses)
<b>CORE</b>	FIN 500 Financial Management	MIS 502 Data Management for Analytics	FIN 500 Financial Management	FIN 500 Financial Management
	MKT 500 Marketing Strategy	MIS 584 Business Intelligence*	MKT 500 Marketing Strategy	MKT 500 Marketing Strategy
	OIE 501 Operations Management	OIE 552 Modeling and Optimizing Processes	OIE 501 Operations Management	OIE 501 Operations Management
	MIS 502 Data Management for Analytics		MIS 584 Business Intelligence	MIS 584 Business Intelligence
			OBC 506 Leadership	OBC 506 Leadership
				BUS 500 Business Law
				OBC 505 Teaming and Organizing for Innovation
				ETR 593 Tech Commercialization
<b>CAPSTONE</b>	OBC 505 Teaming and Organizing for Innovation	OBC 505 Teaming and Organizing for Innovation	BUS 590 Strategic Management	<b>NO CAPSTONE</b>
	BUS 594 Data-driven Business Strategy (Capstone)	BUS 596 MS Capstone	BUS 599 MBA Capstone	
	STEM MBA (36 credits - 12 courses)	MSBA (33 credits - 11 courses)	Online MBA (36 credits - 12 courses)	MSMG (30 credits - 10 courses)
<b>SPECIALTIES</b>	ANY 2 SPECIALTIES	ANY 2 SPECIALTIES	ANY 1 SPECIALTY + 2 ELECTIVES	2 FREE ELECTIVES
	Marketing Analytics	Marketing Analytics	Business Analytics Core	
	Operations Analytics	Operations Analytics	Advanced Operations Analytics	
	Data-driven Strategic Management	Advanced Business Analytics Methods	Advanced Business Analytics Methods	
	Applied Business Analytics		Applied Business Analytics	
			Operations Excellence	
			Supply Chain Management	
			IT Core	
			Digital Transformation	
			IS Design	
			IT UX	
			Entrepreneurship	
		Organizing and Managing Innovation		
		Product Management		
		Marketing Management		

## APPENDIX C: Market Analysis



## APPENDIX D: Other Universities offering STEM Programs or Concentrations

University	City, State	Program and/or Concentration
Carnegie Mellon University	Pittsburgh, PA	
Case Western Reserve University	Cleveland, OH	Finance, FinTech, Operations, Business Analytics
Columbia University	NYC, NY	
Cornell University	Ithaca, NY	
Georgia Institute of Technology	Atlanta, GA	
University of California, Berkeley	Berkeley, CA	
Drexel University	Philadelphia, PA	Accounting Analytics (Coming Fall 2023), BA, Economics, Finance, Marketing Technology and Analytics (Coming Fall 2023), Supply Chain Management and Logistics
Lehigh University	Bethlehem, PA	Business Analytics
Rochester Institute of Technology	Monroe County, NY	
Stevens Institute of Technology	Hoboken, NJ	Information Systems, Business Intelligence and Analytics, Finance, Financial Engineering, Financial Analytics, Project Management, Sustainability Management
<b>LOCAL OFFERINGS IN MASSACHUSETTS</b>		
Babson College	Wellesley, Massachusetts	MSBA and MBA (Business Analytics concentration)
Bentley University	Waltham, Massachusetts	MSBA
Boston College	Newton, Massachusetts	MBA (STEM Track), MBA (Business Analytics concentration)
Boston University	Boston, Massachusetts	MSBA (Marketing Analytics, Healthcare Analytics, Applied Data Science)
Clark University	Worcester, Massachusetts	MSBA
Northeastern University	Boston, Massachusetts	MSBA
Suffolk University	Boston, Massachusetts	MSBA and MBA- Business Intelligence concentration



**Appendix**  
**Consent Agenda Motions**

(see next page)

**Date:** November 8, 2023

**To:** WPI Faculty

**From:** Committee on Academic Operations (Prof. Van Dessel, Chair)

**Re:** Motion to add EDU 2200: Early Fieldwork in STEM Teaching and Community Engagement

**Motion:** On behalf of the STEM Education Center, the Committee on Academic Operations recommends, and I move that EDU 2200: Early Fieldwork in STEM Teaching and Community Engagement, as described below, be added.

**Proposed Course Description:**

**EDU 2200: Early Fieldwork in STEM Teaching and Community Engagement** (*Cat. I, 1/6 unit*)

This course provides an opportunity for students to learn about the local community and engage with community-based organizations (CBOs) that support PreK-12 students and their families in the context of STEM education.

*Recommended background:* PSY 1401 Developmental Psychology, PSY 2401 Psychology of Education, or PSY 2410 School Psychology

**Rationale:**

Early exposure to working with K-12 students, parents, educators, and community-based organizations sets a good foundation for WPI students in the Teacher Preparation Program (TPP) for Licensure at the secondary level and any other WPI undergraduate interested in teaching K-12 STEM in the community. This course would include the Gateway I experience as required by the Massachusetts Department of Elementary and Secondary Education (DESE) for licensure. The TPP students had been already spending time volunteering in the local community, and this course would allow preparation, scaffolding, and reflection of the fieldwork that was not there before. In addition, students would earn course credit and have the course on their transcript.

*Impacts on students taking the course:* Students will get an early and strong foundation in understanding the education ecosystem within a local community and develop an asset-based framework with working in the community. Such fundamentals are essential for educators to be effective and culturally responsive. Topics will include equity in STEM learning opportunities, ethics of working with youth and community members, and community cultural wealth.

**Assessment:** Students will be keeping logs and be journaling about their experiences at Community-Based Organizations (CBOs). A profile about the CBO and their students will be a deliverable. Course assignments and class discussions will involve prompts to achieve the learning objectives.

**Resources Needed:** No new resources are needed, and placements in the community are ready to go.

- Instructors: Current faculty (Kathy Chen, Noemi Robertson) are able to teach the course.
- Classroom: Standard classroom
- Laboratory: none
- Library resources: No additional supports needed.

- Information Technology: No special support or equipment needed.

**Implementation Date:** The change is expected to be implemented starting in 2024-25.

**Contact:** Kathy Chen, Executive Director, STEM Education Center, [kcchen@wpi.edu](mailto:kcchen@wpi.edu).

**Date:** November 8, 2023

**To:** WPI Faculty

**From:** Committee on Academic Operations (Prof. Van Dessel, Chair)

**Re:** Motion to add EDU 2300: Out-of-School Time K-12 STEM Education in the Local Community

**Motion:** On behalf of the STEM Education Center, the Committee on Academic Operations recommends, and I move that EDU 2300: Out-of-School Time K-12 STEM Education in the Local Community, as described below, be added.

**Proposed Course Description:**

**EDU 2300: Out-of-School Time K-12 STEM Education in the Local Community**  
(Cat. I, 1/6 unit)

This course provides an opportunity for students to gain practice in developing and facilitating hands-on, culturally relevant STEM learning activities in an informal setting for K-12 students within an out-of-school time program at a local school or community-based organization. Advancing equity and justice through STEM teaching is highlighted.

*Recommended background:* PSY 1401 Developmental Psychology, PSY 2401 Psychology of Education, or PSY 2410 School Psychology

**Rationale:**

STEM outreach activities can be designed to advance equity in K-12 education opportunities with proper background and guidance. This course will apply theories of informal learning and culturally responsive teaching for students to develop and facilitate STEM activities at out-of-school time programs in the local community. Students will receive feedback and have opportunities to reflect and iterate upon their activity and teaching. This course will also serve as a Gateway experience and assessment for the Teacher Preparation Program (TPP) for Licensure at the secondary level, as required by the Massachusetts Department of Elementary and Secondary Education (DESE). Other undergraduate students are able to take the course as well. The TPP students have been facilitating one lesson as an extra-curricular activity, and with this course they will be able to have a more structured experience for enhanced learning outcomes. In addition, students would earn course credit and have the course on their transcript.

*Impacts on students taking the course:* Students will be learning about evidence-based teaching strategies for out-of-school time settings and applying them in K-12 programs in the community. Learning objectives include culturally responsive teaching, equity in education, and being a reflective educator.

**Assessment:** Development of STEM learning activities will be iterated to be engaging and culturally relevant, and facilitation of the activity will receive feedback based on a rubric that matches the Massachusetts Dept. of Elementary and Secondary Education (DESE) expectations for meeting diverse needs, safe learning environment, and reflective practice.

**Resources Needed:** No new resources are needed, and placements in the community are ready to go.

- Instructors: Current faculty (Kathy Chen, Noemi Robertson) are able to teach the course.
- Classroom: Standard classroom
- Laboratory: none
- Library resources: No additional supports needed.
- Information Technology: No special support or equipment needed.

**Implementation Date:** The change is expected to be implemented in 2024-25.

**Contact:** Kathy Chen, Executive Director, STEM Education Center, [kcchen@wpi.edu](mailto:kcchen@wpi.edu).

**Date:** November 8, 2023  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Van Dessel, Chair)  
**Re:** Motion to add EDU 4200: Senior Seminar

**Motion:** On behalf of the STEM Education Center, the Committee on Academic Operations recommends, and I move that EDU 4200: Senior Seminar, as described below, be added.

**Proposed Course Description:**

**EDU 4200 Senior Seminar** (*Cat I, 0 credits*)

As an essential component of the Teacher Preparation Program, this seminar addresses current issues that impact the field of education to encourage discourse and deepen understanding of K-12 school culture and classroom environments experienced during the student-teaching practicum. Other topics include career coaching, resume and cover letter development, navigating a job search and interview preparation skills for K-12 educators.

*Recommended background:* Completion of Student Teaching practicum of the Teacher Preparation Program

Only students in their last year of the Teacher Preparation Program should register for this course.

**Rationale:**

This seminar class engages seniors who have completed their teaching practicum to deepen their exploration of topics that impact the field of education and make connections with their fieldwork experiences. This seminar has been taking place, but not as an official course.

With this Senior Seminar course, students will receive acknowledgement for their continued work with current issues that impact the field of education as they prepare to enter the workforce. This is also to ensure the seminar appears on their transcripts.

*Impacts on students taking the course:* Benefits the TPP students with the licensure process.

**Resources Needed:** No new resources are needed. Instructors (Jillian DiBonaventura, Noemi Robertson, TJ Noviello) are able to teach the course.

**Implementation Date:** The change is expected to be implemented starting in 2024-25.

**Contact:** Jillian DiBonaventura, Director of Teacher Preparation, [jdibonaventura@wpi.edu](mailto:jdibonaventura@wpi.edu)

**Date:** November 8, 2023

**To:** WPI Faculty

**From:** Committee on Academic Operations (Prof. Van Dessel, Chair)

**Re:** Motion to change the course prefix of ID 3200: *Sheltered English Immersion Endorsement Course for Teachers* to EDU 3200

**Motion:** On behalf of the STEM Education Center, the Committee on Academic Operations recommends, and I move that the course number of ID 3200: *Shelter English Immersion Endorsement Course for Teachers* be changed to EDU 3200.

**Proposed Course Number and Description:**

(with new text highlighted in yellow and deleted text ~~struckthrough~~)

~~ID~~ **EDU 3200 Sheltered English Immersion Endorsement Course for Teachers** (*Cat. I, 1/3 unit*)

This course is to prepare undergraduates looking to become future Commonwealth teachers with the knowledge and skills to effectively shelter their content instruction, so that the growing population of English language learners (ELLs) can access curriculum, achieve academic success, and contribute their multilingual and multicultural resources as participants and future leaders in the 21st century global economy.

*Recommended background:* Teaching Methods or equivalent.

**Students who took ID 3200 for credit are not eligible to take EDU 3200 for credit.**

**Rationale:**

In Spring 2023, the CAO motion for the EDU prefix was approved and the modified course name will make it easier for students who are seeking education-related courses to find it. The modification will also help the Teacher Preparation Program (TPP) students earn their licensure with the State of Massachusetts.

*Impacts on students taking the course:* Benefits the TPP students with the licensure process.

**Resources Needed:** No new resources are needed.

**Implementation Date:** The change is expected to be implemented starting in 2024-25.

**Contact:** Kathy Chen, Executive Director, STEM Education Center, [kcchen@wpi.edu](mailto:kcchen@wpi.edu).

**Date:** November 8, 2023

**To:** WPI Faculty

**From:** Committee on Academic Operations (Prof. Van Dessel, Chair)

**Re:** Motion to change the course prefix of ID 4000: *Topics in Teacher Preparation: Practicum Seminar* to EDU 4000

**Motion:** On behalf of the STEM Education Center, the Committee on Academic Operations recommends, and I move that the course number of ID 4000: *Topics in Teacher Preparation: Practicum Seminar* be changed to EDU 4000.

**Proposed Course Number and Description:**

(with new text highlighted in yellow and deleted text struckthrough)

**~~ID~~ **EDU 4000 Topics in Teacher Preparation: Practicum Seminar** (*Cat. I, 1/6 unit*)**

This course provides teacher candidates with guidance, support, and best practices to successfully complete the Massachusetts state requirements for initial licensure in a STEM field of their choice. The seminar accompanies the student-teaching experience in a local school and may not be repeated. It is an essential element in the process of completing the seven (7) essential core competencies of the Department of Elementary and Secondary Education's (DESE) Candidate Assessment of Performance (CAP) portfolio.

*Recommended background:* Teaching Methods EDU4100 or equivalent, Sheltered English Immersion EDU3200 or equivalent, PSY2401 Psychology of Education, completion of pre-practicum fieldwork experiences 1 and 2.

**Students must be doing their student teaching practicum concurrently to enroll in this course.**

**Students who took ID 4000 for credit are not eligible to take EDU 4000 for credit.**

**Rationale:** The EDU prefix was approved May of 2023 for use as the prefix for courses offered in the Teacher Preparation Program. Thus, we would like to convert ID 4000 to EDU 4000 so coursework in our program is more easily identified.

*Impacts on students taking the course:* Benefits the TPP students with the licensure process.

**Resources Needed:** No new resources are needed.

**Implementation Date:** The change is expected to be implemented starting in 2024-25.

**Contact:** Jillian DiBonaventura, Director of Teacher Preparation, [jdibonaventura@wpi.edu](mailto:jdibonaventura@wpi.edu)



**Date:** November 8, 2023

**To:** WPI Faculty

**From:** Committee on Academic Operations (Prof. Van Dessel, Chair)

**Re:** Motion to change the prefix, number, title, and description of ID 3100: *Teaching Methods in Mathematics and Science*

**Motion:** On behalf of the STEM Education Center, the Committee on Academic Operations recommends, and I move that the course prefix, number and title of ID 3100: *Teaching Methods in Mathematics and Science* be changed to EDU 4100 *Teaching Methods in Science, Technology, Engineering, and Mathematics*, and the course description be modified, as described below.

**Description of the Proposed Changes:**

The proposed changes to the course ID 3100 are as follows:

1. Modification of prefix from ID to EDU
2. Modification of course number from 3100 to 4100
3. Modification of course title
4. Modification of course description

***Current course prefix, number, title, and description:***

**ID 3100: Teaching Methods In Mathematics And Science** (*Cat. I, 1/3-unit*)

Within the context of contemporary secondary education in mathematics and science (biology, chemistry, physics), ID 3100 introduces and demonstrates effective teaching methods as they relate to curriculum goals and current methods of assessment. These methods take into account diverse learning styles as well as various technological resources. Topics to be covered include: a brief history of education; curriculum and course guidelines (Massachusetts Education Reform and regulations 603 CMR 7 .00, state curricular frameworks, national standards); legal issues; developing a course syllabus; and the issue of breadth versus depth in course planning and delivery. The course also covers practical questions of organizing, delivering and assessing a course. This course is intended primarily for students interested in completing the Massachusetts requirements for teacher licensing. This program is aimed primarily at majors in mathematics, physics, chemistry, biology, and certain engineering fields wishing to be licensed to teach in middle or high school in one of those disciplines. A portion of the course requires students to complete field work in a local classroom to assist them in beginning to acquire the appropriate skills to conduct their own classes in mathematics, science, or engineering at the secondary school level.

*Recommended background:* Principals of educational psychology including: understanding student characteristics, the learning process, motivation to learn, student diversity; evaluating student learning (PSY 2401)

Note, this course is typically held off campus at Doherty High School (approximately 1 mile from campus) so please plan for travel time when signing up.

***Proposed course prefix, number, title, and description:***

**EDU 4100: Teaching Methods in Science, Technology, Engineering, and Mathematics** (*Cat. I, 1/3-unit*)

This course provides students with skills and instructional strategies necessary for success in teaching Science (biology, chemistry, physics), Technology (computer science), Engineering, and Mathematics in middle and high school classrooms. Students are introduced to the seven elements of the Candidate Assessment of Performance (CAP), which is the evaluative tool used to obtain teaching licensure within the Commonwealth of Massachusetts. Course topics include: a brief history of education; curriculum and course guidelines (Massachusetts Education Reform and regulations 603 CMR 7 .00, state curricular frameworks, national standards); legal issues; developing unit and lesson plans; and evidence-based teaching methods. Students learn about the elements of an engaging and inclusive lesson, create and design series of lessons to form a unit plan using backward design, how to manage a classroom, group work, and how to develop a classroom management plan, and how to assess student understanding using formative and summative techniques. A portion of the course requires students to complete field work in a local classroom to prepare for the student teaching practicum.

Students who took ID 3100 for credit are not eligible to take EDU 4200 for credit.

*Recommended background: PSY 1401 or 2401 or 2410, EDU 2200, EDU 2300, EDU 3200*

### **Rationale:**

The need for each of the changes is explained in detail below. The benefits will be for the Teacher Prep students earning their teaching license and for the Teacher Preparation Program as a whole (especially for State review purposes).

1. In Spring 2023, the CAO motion for the EDU prefix was approved and the modified course name will make it easier for students who are seeking education-related courses to find it. The modification in the course title will also help the Teacher Preparation Program (TPP) students earn their licensure with the State of Massachusetts in Science, Tech/Engineering, or Mathematics.
2. The modified course number reflects that this is the final course that students in the TPP take prior their practicum experience. The numbering sequence of the EDU will assist with the State program review of the Teacher Preparation Program every 5 years.
3. The new course title is proposed to incorporate the new Tech/Engineering license that was recently approved by the State to be offered through the WPI Teacher Preparation Program and better describes the course.
4. The course description was revised to reflect the current course content and learning objectives. The EDU courses for the TPP has been added to the recommended background. The course is also no longer being taught at Doherty High School.

*Impacts on students taking the course:* The modification of the course will impact current students by needing to register for the changed course title and number. With the close communications that the Director of TPP has with the Teacher Preparation students, there is little concern. Future students will have an easier time of finding the required courses with the EDU prefix.

**Resource Needs:** No new resources are needed.

**Implementation Date:** The change is expected to be implemented starting in 2024-25.

**Contact:** Thomas Noviello, Instructor, Physics Department & STEM Education Center, [tnoviello@wpi.edu](mailto:tnoviello@wpi.edu).

**Date:** November 8, 2023

**To:** WPI Faculty

**From:** Committee on Academic Operations (Prof. Van Dessel, Chair)

**Re:** Motion to modify the distribution requirements for the B.S. Degree in Civil Engineering

**Motion:** The Committee on Academic Operation recommends, and I move, that the distribution requirements for the B.S. Degree in Civil Engineering be modified as described below.

**Description of the Proposed Changes:**

**Current Distribution Requirements:**

<u>Requirements</u>	<u>Minimum Units</u>
Mathematics and Basic Science (Note 1)	4
Engineering Science and Design (including the MQP) (Note 2)	6

Notes:

1. Mathematics and Basic Science
  - a. Must include 7/3 unit in Mathematics (MA), including differential and integral calculus, differential equations, probability, and statistics.
  - b. Must include at least 1/3 unit in physics (PH), 2/3 unit in chemistry (CH), and 1/3 unit in an additional science area (BB or GE).
  - c. Must include 1/3 unit elective from BB, CH, GE, MA, PH, or FY courses that satisfy BB, CH, GE, MA or PH
2. Engineering Science and Design
  - a. 6/3 units Fundamental Engineering Science
    - i. Must include 2/3 units in solid mechanics, 1/3 unit in soil mechanics, and 1/3 unit in fluid mechanics (fulfilled by CE 2000 (or ES 2501), CE 2001 (or ES 2502), CE 3041, ES 3004).
    - ii. Must include 2/3 units of engineering science from the following list: CE 2002, ES 2001, ES 2503, ES 2800, ES 3001, ES 3002.
  - b. 12/3 units Civil Engineering
    - i. Must include 4/3 units in Core Civil Engineering, including Structural Engineering, Transportation Engineering, Project Management, and Environmental Engineering (fulfilled by CE 3010, CE 3020, CE 3050, CE 3059).
    - ii. Must include 3/3 units of civil engineering depth courses at the 3000-level or above, fulfilled by all CE courses not listed in other notes and with at least 2/3 unit from within one sub-discipline of CE.
    - iii. Must include 2/3 units of civil engineering laboratory experience fulfilled by: CE 2020, CE 3026, CE 4054, CE 4060.
    - iv. Must include 1 unit of MQP, including 1/3 unit of capstone design.

**Proposed Program Distribution Requirements**

(with deletions shown with ~~strike through~~ and additions shown in red):

<u>Requirements</u>	<u>Minimum Units</u>
Mathematics and Basic Science (Note 1)	4
Engineering Science and Design (including the MQP) (Note 2)	6

Notes:

1. Mathematics and Basic Science
  - a. Must include 7/3 unit in Mathematics (MA), including differential and integral calculus, differential equations, probability, and statistics.
  - b. Must include at least 1/3 unit in physics (PH), 2/3 unit in chemistry (CH), and 1/3 unit in an additional science area (BB or GE).
  - c. Must include 1/3 unit elective from BB, CH, GE, MA, PH, or FY courses that satisfy BB, CH, GE, MA or PH
  
2. Engineering Science and Design
  - a. 6/3 units Fundamental Engineering Science
    - i. Must include 2/3 units in solid mechanics, 1/3 unit in soil mechanics, ~~and~~ 1/3 unit in fluid mechanics, **and 1/3 unit in structural analysis** (fulfilled by CE 2000 (or ES 2501), CE 2001 (or ES 2502), CE 3041, ES 3004, **CE 2002**).
    - ii. Must include ~~2/3~~ **1/3** units of engineering science from the following list: ~~CE 2002~~, ES 2001, ES 2503, ES 2800, ES 3001, ES 3002.
  - b. 12/3 units Civil Engineering
    - i. Must include 4/3 units in Core Civil Engineering, including Structural Engineering, Transportation Engineering, Project Management, and Environmental Engineering (fulfilled by CE 3010, CE 3020, CE 3050, CE 3059).
    - ii. Must include 3/3 units of civil engineering depth courses at the 3000-level or above, fulfilled by all CE courses not listed in other notes and with at least 2/3 unit from within one sub-discipline of CE.
    - iii. Must include 2/3 units of civil engineering laboratory experience fulfilled by: CE 2020, CE 3026, CE 4054, CE 4060.
    - iv. Must include 1 unit of MQP, including 1/3 unit of capstone design.

**Rationale:**

The Civil Engineering (CE) program distribution requirements were substantially revised in 2020 to provide a cohesive core curriculum. As part of this change, students are required to take a core class in Structural Engineering (4 b i), which is fulfilled by CE 3010. CE 3010 has a recommended background of CE 2000, CE 2001 and CE 2002. While the “Fundamental Engineering Science” grouping requires 2/3 unit in solid mechanics, it does not require 1/3 unit in structural analysis. Rather, the structural analysis course is a choice from among 6 courses in Note 4 b ii. Thus, some students are not fully prepared for CE 3010. The proposed change corrects this loophole.

**Implementation Date:** Implementation date for this action is the 2024-2025 Academic year.

**Date:** November 8, 2023

**To:** WPI Faculty

**From:** Committee on Academic Operations (Prof. Van Dessel, Chair)

**Re:** Motion to modify the distribution requirements for the Business minor

**Motion:** On behalf of the Business School, the Committee on Academic Operations recommends and I move that the distribution requirements for the Business minor be modified as described below.

**Description of the Proposed Changes:**

(\*note: a previous motion to change course prefixes was approved AY22)

(added courses/course titles/corrections are highlighted)

**Program Distribution Requirements for the Business Minor:**

The minor requires the completion of two units of coursework as noted below.

1. Select any five from the following:

ECON 1110 **Introductory Microeconomics** or ECON 1120 **Introductory Macroeconomics**  
OBC 1010 **Leadership Practice** or OBC 4367 **Leadership Ethics, and Social Responsibility**  
BUS 1020 Global Environment of Business Decisions  
BUS 2020 The Legal Environment of Business Decisions  
ACC 2060 Financial Statements for Decision Making  
FIN 2070 **Risk Analysis for Decision Making** or FIN 3300 **Finance and Technology (FinTech)**  
BUS 2080 Data Analysis for Decision Making  
MIS 3010 **Creating Value Through Innovation** or MIS 4084 **Business Intelligence**  
OIE 3020 Achieving Effective Operations  
**BUS 2001 WPI Means Business**  
FIN 1250 **Personal Finance** or OIE 2850 **Engineering Economics**  
**MKT 3650 Consumer Behavior**

2. Select one of the following:

MKT 4030 Achieving Strategic Effectiveness  
ETR 4930 Growing and Managing New Ventures

**Rationale:**

Proposed changes to the business (BUS) minor offers a wider selection of courses to non-WBS students. As a department, we aim to provide business competencies to all WPI students. The minor in Business will continue to be available to all students at WPI, except for those majoring in Business, Management Engineering or Management Information Systems at WPI. We have previously updated the course prefixes for AY 2023-24 and this motion reflects these changes.

**Implementation Date:** Implementation date for this action is the 2023-2024 Academic year.

**Contact:** Prof. Adrienne Hall-Phillips

**Date:** November 8, 2023

**To:** WPI Faculty

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

**Re:** Motion to add IGS 502: Perspectives in Global Health

**Motion:** On behalf of the Department of Integrative and Global Studies and the (pending) Global Health Graduate Program, the Committee on Graduate Studies and Research recommends and I move that IGS 502: Perspectives in Global Health, as described below, be added.

**Proposed Course Description:**

**IGS 502: Perspectives in Global Health** (*Cat. I, 3 credits*)

The concept of "global health" has diverse meanings in different contexts. This graduate course will introduce students to multiple perspectives on global health and examine the debates and contestations that define this nascent field. Throughout the course, students will be in conversation with different disciplines—anthropology, public health, development studies and gender studies—and will critically examine global health as ideology and practice. Case studies and examples will primarily be drawn from Africa, North America, and internationally to facilitate cross-cultural comparisons and will focus, *inter alia*, on recent pandemic outbreaks (e.g., HIV/AIDS, COVID and Ebola) and long-standing global health challenges like maternal mortality and water, sanitation and hygiene (WASH). The key topics to be covered in the course will include: history of global health, interdisciplinary perspectives on global health; (de)coloniality and global health architecture, social determinants of health, global health interventions and their successes and failures, and planetary health. This course engages substantially with the following Sustainable Development Goals: no poverty, good health and wellbeing, gender equality, clean water and sanitation, reduced inequalities and partnerships for the goals.

*Recommended background:* Acceptance into the Global Health Graduate program or permission of instructor.

**Anticipated instructor:** Tsitsi B Masvawure, Assistant Professor of Global Health, DIGS

**Rationale:**

IGS 502 is a core required course in the proposed graduate program in Global Health. It is designed to provide students with a broad understanding of the history and foundations of how we understand and approach health across the globe. Diverse cultures, ideologies, and political economies give rise to how we understand health, how we address health issues, how we understand health inequities, and how we design health technologies and manage health systems. Understanding this in a detailed way is essential for students to approach their individual tracks and course plans with a heightened capacity for critical analysis and contextual sensitivity.

This course is part of a two-pronged approach that also includes a Graduate Qualifying Project, or GQP. The aim is to create an interdisciplinary program that a) is truly global in terms of cross-cultural perspectives; and b) embodies the WPI tradition of interdisciplinary global projects that approach global challenges at the intersection of science, technology and society through integrative preparation and global fieldwork.

The course will add to WPI's offerings on health, including the existing minor program in Global Public Health, and will also offer students in other graduate programs (including Community Climate Adaptation and Science and Technology for Innovation in Development, and future programs such as Architectural Engineering) an elective option.

**Implementation Date:** First offering will be in Fall 2024

**Resources Needed:**

- This is a new graduate course and will be part of the normal load.
- Classroom/Zoom space for 25-30 people
- Laboratory: N/A
- Library resources: N/A
- Information Technology: N/A

**Impact on Distribution Requirements and Other Courses:** None

**Date:** November 8, 2023

**To:** WPI Faculty

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

**Re:** Motion to add IGS 555: Collaboration for a Better World Seminar Series

Motion: On behalf of the Department of Integrative and Global Studies, the Committee on Graduate Studies and Research recommends and I move that IGS 555: Collaboration for a Better World Seminar Series, as described below, be added.

**Proposed Course Description:**

**IGS 555 Collaboration for a Better World Seminar Series** (*Cat. I, 0 credits*)

This is a faculty directed seminar series open to all faculty, students, and staff at WPI. The series features talks and presentations by scholars, teachers, and practitioners from within and outside of WPI on their interdisciplinary, collaborative work that addresses and links issues of environment, health, community development, and justice. The seminar series gives graduate students from interdisciplinary programs, alongside faculty, an opportunity to integrate and contextualize their individual experiences, perspectives, and scholarship within the broader global context. The seminars will help students engage with 1) intersectoral and transdisciplinary themes that relate to global issues of health, environment, development, and justice in the broader context; 2) discuss the intersections of societal needs and technological responses and, 3) critical approaches to technology and expertise.. The seminar also aims to develop habits of lifelong learning as students articulate strategies for translating their global health experiences and expertise into personal values and professional opportunities in their future careers.

The format of the series is a 45-minute talk with 45 minutes for discussion. Each year, the CFBW committee develops the year's program of 6-8 speakers who speak on a range of issues of broad interest to the WPI community. Past speakers have addressed topics around urban planning and environment (Dr. James Evans); politics, justice, and energy transitions (Dr. Jennie Stephens); multi-cultural approaches to health and hazards (Dr. Lily Balloffet); and politics and community development in the context of extractive economies (Dr. Thea Riofrancos).

*Recommended background:* Any – the seminar is open to all.

**Anticipated instructor:** A rotating committee of 3 DIGS faculty works together to identify speakers and schedule the series each year. The CCA program directors will be in charge of registering students and confirming participation.

**Rationale:**

The seminar was created as part of a broader effort to provide opportunities for the Department of Integrative and Global Studies to extend an invitation to people from across campus to consider, engage, and discuss novel topics of global importance and crosscutting themes of interdisciplinary relevance. Graduate students, particularly from interdisciplinary programs, will benefit immensely from these interdisciplinary conversations and the creation of a culture of collaboration for a better world. Furthermore, the seminars will promote cohort formation and community among students from different programs.

**Implementation Date:** First registrations will be in the Fall 2024



**Resources Needed:**

- Volunteer committee of organizers from the Department of Integrative and Global Studies
- Speaker honorarium (currently comes from the Hull Fund)
- Ad hoc space for the speaker + 30-40 participants

**Impact on Distribution Requirements and Other Courses:** None