

**WORCESTER POLYTECHNIC INSTITUTE**  
**May 9, 2017**

**To:** The WPI Faculty

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

The ninth Faculty meeting of the 2016-17 academic year will be held on **TUESDAY, May 9, 2017** at 11:00 am in **Olin Hall 107**, with refreshments at 10:45 am.

1. Call to Order M. Richman
  - Approval of the Agenda
  - Approval of Consent Agenda (including and Minutes from 4-13-17)
2. Opening Announcements M. Richman
3. President's Remarks L. Leshin
4. Provost's Remarks B. Bursten
5. Committee Business
  - Committee on Academic Operations (CAO) G. Iannacchione
    - May 2017 Undergraduate Student Graduation List
  - Committee on Graduate Studies and Research (CGSR) K. Troy
    - May 2017 Graduate Student Graduation List
  - Committee on Governance (COG) L. Albano
    - Faculty Review Committee (FRC) A. Hoffman
      - Motion to Expand the Role of the Faculty Review Committee (FRC) to Include an Appeal Process for Negative Promotion Decisions
  - Committee on Graduate Studies and Research K. Troy
    - Motion to modify policies related to Academic Standards for Graduate Students
    - Motion to modify policies for teaching and research assistantships for graduate students
    - Motion to clarify TOEFL policy for Graduate TAs
    - Motion to modify Internships section of Graduate Catalog and add a course designator
    - Motion to modify the enrollment policies and course limits for non-degree students
    - Motion to modify policies related to full-time status for Graduate Students
6. New Business
7. Closing Announcements
8. Adjournment

**TABLE OF CONTENTS**  
**Faculty Meeting Materials, May 9, 2017**

	Page
1. Faculty Meeting Minutes: April 13, 2017	3
2. Committee Business	
Committee on Governance (COG)	
Faculty Review Committee (FRC)	
• Motion to Expand the Role of the Faculty Review Committee (FRC) to Include an Appeal Process for Negative Promotion Decisions	7
Committee on Graduate Studies and Research (CGSR)	
• Motion to modify policies related to Academic Standards for Graduate Students	12
• Motion to modify policies for teaching and research assistantships for graduate students	15
• Motion to clarify TOEFL policy for Graduate TAs	16
• Motion to modify Internships section of Graduate Catalog and add a course designator	18
• Motion to modify the enrollment policies and course limits for non-degree students	23
• Motion to modify policies related to full-time status for Graduate Students	24
3. Appendix A: Consent Agenda Motions	25
CAO Motions:	
- to add SS1505 Games for Understanding Complexity	26
- to remove ME 4860 Food Engineering	29
- to remove the AE designation of AE/ME 3901 Engineering Experimentation	30
- to revise the Undergraduate Catalog lists of American Studies courses	31
- to establish a Minor in American Studies	33
- to add Independent Study course designations by subject and level-of-study	35
- to modify MA 1033 Introduction to Analysis III	36
- to modify MA 1034 Introduction to Analysis IV	38
- to modify MA 2431 Mathematical Modeling with Ordinary Differential Equations	40
- to modify MA 3231 Linear Programming	42
- to modify MA 3233 Discrete Optimization	44
- to add ME 4424 Radiation Heat Transfer Application and Design	46
CGSR Motions:	
- to modify policies related to the add-drop policy for Graduate Students	48
- to add BME 583 Biomedical Microscopy and Quantitative Imaging	49
- to add BME 594 Biomedical Engineering Journal Club	51
- to add catalog descriptions for BME graduate research courses	52
4. Appendix B: Motions to approve the May 2017 Graduation Lists	53
Committee on Academic Operations (CAO)	
• Motion to approve the May 2017 Undergraduate Student Graduation List	54
Committee on Graduate Studies and Research (CGSR)	
• Motion to approve the May 2017 Graduate Student Graduation List	73

## WORCESTER POLYTECHNIC INSTITUTE

### Faculty Meeting Minutes

April 13, 2017

#### Summary:

1. Call to Order
2. Opening Announcements
3. President's Remarks
4. Provost's Remarks
5. Memorial Resolution: Prof. Elliot L. Buell (Mathematical Sciences)
6. Committee Reports: CASL
7. Committee Business: CAP/COG; COG/FRC; COAP
8. Closing Announcement
9. Adjournment

#### Detail:

##### 1. Call to Order

The eighth Faculty meeting of the 2016-2017 academic year was called to order at 3:20pm in OH 107 by **Prof. Richman** (ME). The meeting agenda and the consent agenda (including the minutes from March 16, 2017) were approved as distributed.

##### 2. Opening Announcements

**Prof. Richman** (ME) announced that the elections for Faculty Governance standing committees had been concluded. He congratulated the 24 faculty members who had been elected and especially thanked all 55 faculty members who demonstrated their willingness to serve by agreeing to have their names appear on the ballot. Prof. Richman encouraged all those in attendance to attend the Faculty Honors Convocation on Friday, April 21, at 11am.

**Prof. Shue** (CS) announced that the campus software would automatically be migrating to Office 2016 on July 10, 2017, although installation could be done individually before then. He also announced that the Information Technology division would be upgrading the podium and lab computers from Windows 7 to Windows 10, and will attempt as seamless a transition as possible for all.

**Prof. Burnham** (PH) announced that WPI would be hosting a combined American Physical Society/ NanoWorcester conference on April 14<sup>th</sup> to 15<sup>th</sup>, and that a poster session on the 14<sup>th</sup> from 4:30-6:30pm will be open to all.

**Prof. Richman** expressed his appreciation to an anonymous donor for the Passover snacks for today's meeting.

##### 3. President's Remarks

**President Leshin** began by assuring all those in attendance that the news concerning the Foisie gifts are being closely monitored by our University Counsel. As context, she described Robert Foisie's close ties to WPI.

**President Leshin** reported that in the past year the national media coverage of WPI was had increased by 46 percent, local media placements outside New England had more than doubled, and that the coverage of WPI had been overwhelmingly positive. President Leshin described an announcement made just this morning (involving WPI, Lt. Governor Polito, UMass Medical School partners, and the Head of GE Boston headquarters) of a new \$7.5 million investment (\$5 million from Massachusetts and \$2.5 million from GE) at WPI through the Mass-Tech Collaborative in an initiative devoted to developing cyber physical systems applied to healthcare. This work may be located in available space at Gateway II, where we would construct test suites for such applications as medical imaging, surgery, rehabilitation, and in-home aging, so that industry-partners and researchers can collaborate to develop medical devices and bring them to market. She urged any faculty member with research interests that overlap with this effort to get involved at the early stages of this opportunity. She thanked Profs. Fischer and Cyganski as well as VP Flavin for their role as the core of the WPI team that brought this funding to WPI.

##### 4. Provost's Remarks

**Provost Bursten** thanked Dean Camesano for coordinating both the Graduate Research Innovation Exchange (GRIE) and the Investing in Ideas with Impact (i3) event to promote innovation and entrepreneurship among our graduate students. He thanked Prof. Orr for his involvement in the recent sustainability project competition, and

he announced that Carl Schramm (Syracuse University) will be delivering the upcoming University Lecture on April 24<sup>th</sup> entitled "Engineering Future Entrepreneurs."

**Provost Bursten** congratulated Prof. Shue on his recent NSF CAREER Award. He congratulated Prof. Cullon (HUA), Prof. Boudreau (HUA), Prof. Agloro (HUA), Prof. Samson (HUA), Prof. Eddy (HUA), Prof. DiBiasio (CHE), Prof. Mazumder (ECE) and Prof. McCauley (IGSD) on their NEH Humanities Connection Grant for the creation of an interdisciplinary Urban Humanities teaching cluster. The Provost expected campus visits by Dean of Arts and Sciences candidates during the week just prior to the May Board of Trustees' meeting. The Provost plans to bring the promotion changes approved by the Faculty to the Board's Academic Planning Committee.

#### 5. Memorial Resolution

**Prof. Humi** (MA) read a memorial resolution to honor Prof. Elliot L. Buell, who served on the WPI Faculty in the Department of Mathematical Sciences from 1957 to 1978 and passed away on February 12, 2016. (See **Addendum #1** attached to these minutes.) The resolution **passed** and a moment of silence was observed in Prof. Buell's honor.

#### 6. Committee Reports: CASL

**Prof. Rahbar** (CEE), for the Committee on Advising and Student Life, explained that WPI Insight advisors work with 25 to 30 first-year students each year to help them acclimate to the WPI's environment and academic expectations. Since the start of the Insight program in 1999, the retention rate of first-year students has increased from 89 to 96 percent, while first-year students on academic warning have decreased from 10.5 to 4.4 percent. Finally, Prof. Rahbar recognized Maggie Becker (CDC), Marge Gribouski (BUS), Prof. Lauren Mathews (BBT), Prof. Robert Traver (UG Studies) for five years of Insight advising; Prof. Destin Heilman (CBC) for ten years of Insight advising; and Prof. Jill Rulfs (BBT) for 15 years of Insight advising.

#### 7. Committee Business

##### CAP/COG

**Prof. Humi** (MA), for the Committee on Academic Policy, and **Prof. Dominko** (BBT), for the Committee on Governance, moved that the current language describing UOAC membership (in Part One, Bylaw One, Section X of the Faculty Handbook) be revised, as Prof. Humi described in a brief presentation. (See **Addendum #2** attached to these minutes.) The motion adds IGSD to one identified group of academic departments from which a UOAC member may be elected; it allows CAP to appoint a member to UOAC who is not necessarily a member of CAP; and most importantly, it adds the Director of Institutional Research as an *ex officio* member of UOAC.

This motion **passed** without further discussion.

##### COG/FRC

**Prof. Dominko** (BBT), for the Committee on Governance (COG), and **Prof. Hoffman** (ME), for the Faculty Review Committee (FRC), gave a presentation on a motion to expand the role of the Faculty Review Committee (FRC) to include an appeal process for negative promotion decisions. (See **Addendum #3** attached to these minutes.) Prof. Dominko explained that the motivation for the motion was a recommendation from the Task Force on Academic Promotion. The appeal process would be available to tenured, tenure-track, and continuing non-tenure track faculty members, and would be restricted to cases in which the decision is alleged to have resulted from a violation of academic freedom, improper procedure, or discrimination. The motion will be voted on at the May 9, 2017 Faculty meeting.

**Prof. Humi** (MA) asked if the Provost would meet with COAP in the event that the Provost's recommendation differed from COAP's. His question would be addressed in the motion from COAP to follow.

**Prof. Demetriou** (ME) thought the deadline to file the grievance should be ten days after the candidate is notified of the negative decision rather than ten days after the Trustees meet in February. **Prof. Dominko** explained that the proposal simply added an appeal process for negative promotion decisions that was exactly parallel to the current appeal process for negative tenure decisions.

##### COAP

**Prof. Hansen** (HUA), for the Committee on Appointments and Promotions, moved that the existing "D.2 Nomination Procedures for Faculty Promotion" (Handbook, Part Two, Section 1.D) be replaced with the procedures described in the distributed meeting materials. Prof. Hansen explained that the revised procedures

provide clarity about the roles played by each participant in the promotion process, and about the time in rank expected before promotion. The motion describes how the Joint Promotion Committees will function, and in this respect borrows heavily from the Joint Tenure Committees. The motion defines the process to select professional associates and external reviewers. In addition, it includes a mechanism by which unsuccessful promotion candidates would receive written feedback in the form of a letter written jointly by the Joint Promotion Committee, the Dean, and the Provost. The candidates could also meet with either the nominator, the Dean, or the Provost for further advice. (See **Addendum #4** attached to these minutes.)

**Prof. Farny** (BBT) asked if the changes applied only to tenured and tenure-track faculty members. **Prof. Hansen** explained that they did, but that adaptations of these procedures for non-tenure track faculty members were posted on line.

**Prof. McNeill** (ECE) asked if the feedback to the candidate would make it clear if there had been a disagreement between the Joint Promotion Committee and the Provost. **Prof. Hansen** explained that the feedback would not reveal such a disagreement. The purpose of the feedback is to provide advice in order to resubmit in the future.

**Prof. Martin** (MA) asked if the letter of feedback would be provided to the candidate within the ten-day period allowed to file an appeal. **Prof. Hansen** did not expect that the letter would be sent by then.

**Prof. Gericke** (CBC) was concerned about including the nominator and the Dean in the feedback process because in his view only the Provost would see the entire process when there were conflicting recommendations. **Prof. Hansen** thought that it would be advisable for the Provost always to meet with the Joint Promotion Committee in the event of a negative decision. The Dean is involved through the Provost's period of deliberation. COAP's belief is that the unsuccessful candidate should get feedback from not just the Provost, but also the Dean and the Department Head (even if the Department Head is not the Nominator).

**Prof. Wills** (CS) was confused by the wording that, "The candidate should meet with the Provost, Dean, or the nominator to discuss this letter and to receive further feedback on their case for promotion." He inferred that the candidate was not required to seek such feedback, and Prof. Wills was not sure who among the Provost, the Dean, and the nominator the candidate was expected to meet. **Prof. Hansen** explained that the candidate should feel empowered to meet with any or all of the three for feedback. Prof. Wills asked if the written feedback would be different from the verbal feedback. Prof. Hansen explained that the written letter is the feedback on which the Joint Committee, the Dean, and the Provost would agree, and if the candidate wanted to discuss it further, then he or she should be able to do so - but not with any members of the Joint Promotion other than the nominator. Prof. Wills also asked if the negative recommendation letter would be pertinent to subsequent promotion cases for that particular candidate. Prof. Hansen explained that it would not be.

**Prof. Dougherty** (CS) made a friendly amendment to strike "...and to receive further feedback on their promotion case." The friendly amendment was accepted.

**Prof. Sullivan** (ME) pointed out that, by contrast to COAP's proposal, our current practices do not require that any written letter be provided to the candidate.

**Prof. Humi** (MA) asked for clarification about what was meant by formal written feedback and from whom it would be sent. **Prof. Hansen** presumed that a negative recommendation letter from the Joint Promotion Committee to the Provost would be the basis of the letter to the Candidate if the final decision were negative.

**Prof. Brattin** (HUA) made a friendly amendment to replace the word "should" with "may" in the sentence, "The candidate should meet with the Provost, Dean, or the Nominator...". The amendment was accepted.

**Prof. Demetriou** (ME) thought that the nominator and the advocate were the most important members of the Joint Committee and should have voting rights on the Joint Committee. **Prof. Hansen** pointed out that the Faculty voted in January to involve the nominator and the advocate as non-voting members.

**Prof. Dominko** (BBT) wondered how a single letter could be agreed upon by the Joint Committee and the Provost in the case when the Committee felt strongly that the recommendation should be positive while the Provost decided that the recommendation would be negative. She also asked if, in that case, the Joint Committee would even want to write a letter explaining the negative decision, and why the negative message shouldn't clearly come

from the Provost. **Prof. Hansen** thought that in that scenario, the letter would be written by the Provost and signed as a unitary recommendation by the members of the Joint Promotion Committee. He also suggested that the view of committee members could change after meeting with the Provost when there is a disagreement. Prof. Dominko was skeptical of the likelihood that, after deliberating thoroughly, the Joint Promotion Committee would change its opinion based on a meeting with the Provost. Prof. Hansen thought that such a meeting was an example of shared governance.

**Prof. McNeill** (ECE) was of the view that it would not create a problem if the letter to the candidate were sent after the ten-day period to file a grievance because the letter would concern the merits of the case whereas the appeal would be only on procedural grounds. He also agreed that the nominator and advocate shouldn't have voting privileges because they are selected by the candidate, which distinguishes them from the departmental members of a Joint Tenure Committee. Prof. McNeill asked if, when the Joint Committee made a positive recommendation and the Provost made a negative decision, it would be possible for the letter to the candidate to point out both the positive aspects of the case and the negative areas in which the candidate has fallen short. **Prof. Hansen** did not know if that type of letter would be written.

**Prof. Doyle** (SSPS) asked if the candidate's letter would remain confidential and confined to that year's decision only. **Prof. Hansen** thought that the letter would not be available for that candidate's future cases.

**Prof. Dougherty** (CS) suggested that a better way to think about the letter to the candidate is as advice to the candidate, rather than as a justification of the negative decision. In his view, this might make it easier for those who disagreed about the decision to agree on its content.

**Prof. McNeill** (ECE) suggested that because the confidentiality of the letter would be up to the candidate, he or she could use the letter as evidence of having followed the advice provided when coming up from promotion again. **Prof. Hansen** agreed.

**Prof. Hansen** explained that, if the motion were to pass, for this coming year the deadline for all nominations as well as the deadline for candidates to name their advocates and submit their list of professional associates would be May 1.

**Prof. Demetriou** (ME) asked whether, in the case of an appeal, the candidate would be free to convey to the FRC any verbal communication he or she received from the Dean or the Provost. **Prof. Hansen** thought that it would be up to the candidate to decide what information to submit based on the grounds of the appeal.

**Prof. Gericke** (CBC) asked whether it mattered that the letter could be written either before or after a potential appeal to FRC. **Prof Hansen** explained that the content of the letter is independent of a potential appeal and that appeals should be extremely rare.

The motion **passed**.

#### 8. Closing Announcement

**Prof. Richman** encouraged all those in attendance to participate in the both the graduate and undergraduate commencements and pointed out that regalia may be ordered using the forms available at today's meeting.

#### 9. Adjournment

The meeting adjourned at 4:41pm.

Respectfully submitted,

Mark Richman  
Secretary of the Faculty

#### **Addendum on file with these minutes:**

- 1. Addendum #1 - Memorial Resolution - Prof. Elliot L. Buell (MA) – April 13 2017**
- 2. Addendum #2 - COG-CAP Motion to revise the membership of the UOAC – April 13 2017**
- 3. Addendum #3 - COG-FRC Modify FRC to include appeals of negative promotion decisions – April 13 2017**
- 4. Addendum #4 – COAP Motion to modify the nomination process for faculty promotion – April 13 2017**

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Governance (Prof. Dominko, Chair)  
Faculty Review Committee (Prof. Hoffman, Chair)  
**Re:** Motion to Expand the Role of the Faculty Review Committee (FRC) to Include an Appeal Process for Negative Promotion Decisions

**Motion:** The Committee on Governance (COG) and the Faculty Review Committee (FRC) recommend, and I move that the current language describing Duties and Responsibilities of Faculty Review Committee (in Part One, Bylaw One, Section IX of the Faculty Handbook) and the Operational Guidelines for the Faculty Review Committee (in Part One, Appendix B of the Faculty Handbook) be modified as described below.

**Description of the Proposed Modifications to Part One, Bylaw One, Section IX:** (with added text included in the April 13, 2017 version of the motion shown in **bold**, added text included since the April 13, 2017 version of the motion shown in **underlined italicized bold**, and deleted text ~~struck through~~):

#### IX. The Faculty Review Committee

The Faculty Review Committee (FRC) consists of nine tenured Faculty members: six elected by the Faculty and three appointed by the President. The Chair of the FRC is chosen by the committee from its elected members. Members of CTAF, **members of COAP**, and Faculty members with administrative appointments of 50 percent time or more are ineligible to serve on the FRC.

Each year, the Faculty elects two members to three-year terms, following the procedures prescribed in the WPI Faculty Constitution and Bylaws for the election of members to Standing Committees. Diversity on the FRC is highly valued. Toward that end, there shall be no more than one person from any one Department in the group of six elected members, and following each annual Faculty election, one member of the FRC shall be appointed by the President to a three-year term. These appointments should be made to ensure proper diversity among the FRC members. The term of office of members of the FRC begins on July 1 and ends on June 30. No elected or appointed member may serve consecutive terms. A vacancy in the membership of the FRC shall be filled for the remainder of the unexpired term by that person receiving the next highest number of votes in the most recent election, if the person leaving the Committee was an elected member, or by appointment by the President if the person was an appointed member.

The FRC reviews three types of cases: **1)** faculty grievances; **2)** allegations of faculty misconduct; and **3)** grade appeals.

- 1) For faculty grievances, a subcommittee of FRC consisting of three elected and two appointed members of FRC has the power to review and to require reconsideration of:
  - A. The Provost's ~~actions on non-renewal of~~ **decision not to renew** a probationary, tenure-track appointments;
  - B. ~~The Provost's~~ Negative decisions on tenure; and
  - C. ~~The Joint Tenure Committee's negative recommendations on tenure~~ **Negative decisions on promotions of tenured, tenure track, and continuing non-tenure track faculty members;**

where the action, decision, or recommendation is alleged by an aggrieved faculty member to result from:

- i. a violation of academic freedom; or
- ii. improper procedure; or

- iii. ~~discrimination on any of the grounds listed in Appendix B~~ **based on race, sex, age, color, national origin, religion, genetic identity, disability, gender identity or expression, marital or parental status, sexual orientation, transgender status, veteran status, or any other protected status.**

When a matter regarding a faculty grievance comes before the FRC, a subcommittee of three elected and two appointed members of the FRC are selected by the Chair of FRC to review the grievance. Committee members who have had a significant prior involvement with the matter in question, or who have a personal relationship with any of the parties directly involved in the matter, shall recuse themselves from participating in the proceedings. Recusals may be requested by FRC members, the grievant, or other parties in the action, such as the Provost or the Chair of CTAF or COAP. Additional recusals necessary to create the subcommittee with three elected and two appointed members will be arranged by the Chair of FRC such that recusals are distributed evenly over the FRC membership. The exercise of the functions of the FRC requires the presence and participation of all five members of the subcommittee as constituted for a particular grievance. Operational guidelines for FRC review are described in **Part One, Appendix B, 1-28**).

- 2) For allegations of misconduct **by tenured, tenure-track, and continuing non-tenure track faculty members**, the fact finding committee is selected as described in the appropriate conduct policy (Sexual Misconduct Complaint Procedures: Faculty; Policy on Research Conduct; or Policy on Faculty Conduct). Selection of the fact finding committee is conducted so as to ensure members are unbiased and have the appropriate expertise and diversity as necessary for a particular case.
- 3) The Faculty Review Committee also **has a role** ~~participates~~ in the grade appeal process by forming three- member ad hoc committees to review grade appeals which are presided over by the Chair of the FRC.

When any matters regarding faculty grievances, allegations of faculty misconduct, or grade appeals are pending before the FRC at the time when the term of office of its members would expire, the subcommittee (or investigating committee) shall continue as then constituted for the sole purpose of disposing of such pending matters in its jurisdiction, notwithstanding the creation of a new FRC in the regular manner at the same time.

The exercise of the functions of the FRC, as well as its internal organization and procedures (including, if appropriate, the selection of a Committee Chair and the appointment of subcommittees) shall be governed, insofar as the matter is not prescribed by this policy or by the Faculty Constitution and Bylaws, by rules adopted by the Faculty Review Committee itself.

**Description of the Proposed Modifications to Part One, Appendix B:** (with added text in **bold** and deleted text ~~struck through~~):

## APPENDIX B: OPERATIONAL GUIDELINES FOR THE FACULTY REVIEW COMMITTEE

### FACULTY GRIEVANCES:

~~A Faculty Member may bring before the Faculty Review Committee (FRC) in the form of a grievance, an allegation that:~~

- ~~1. the Provost's actions in not renewing his/her probationary tenure track appointment, or~~
- ~~2. the Provost's adverse decision on his/her tenure candidacy, or~~
- ~~3. the Joint Tenure Committee's negative recommendation on his/her tenure candidacy,~~

~~resulted from:~~

- ~~1. a violation of academic freedom, or~~

~~2. improper procedure, or~~

~~3. discrimination on ground of race, color, national origin, ancestry, sex, religion, creed, religious belief, age, marital status, sexual orientation, veteran status or handicap.~~

**For faculty grievances, a subcommittee of FRC consisting of three elected and two appointed members of FRC has the power to review and to require reconsideration of:**

- A. The Provost's decision not to renew a probationary, tenure-track appointment;**
- B. Negative decisions on tenure; and**
- C. Negative decisions on promotions of tenured, tenure track, and non-tenure track faculty members.**

**where the action, decision, or recommendation is alleged by an aggrieved faculty member to result from:**

- i. a violation of academic freedom; or**
- ii. improper procedure; or**
- iii. discrimination based on race, sex, age, color, national origin, religion, genetic identity, disability, gender identity or expression, marital or parental status, sexual orientation, transgender status, veteran status, or any other protected status.**

When a grievance on any one or more of these grounds is submitted, the grievant shall present all factual or other data that he or she deems pertinent to the case, as well as all the relevant documentation available to him or her. The FRC shall have access to all the relevant documentation under the control of the University in the same manner and to the same extent as had the administrators and committees or other faculty bodies that participated in the decisions or recommendations to which the grievance refers, and with the same obligation of confidentiality that these administrators, committees or bodies were under with regard to any particular document. The body of documents and files available to the FRC must be identical, without addition, deletion, or embellishment, to that available to those participants.

When a grievance is submitted, the FRC shall first decide whether the allegations and the evidence submitted by the grievant merit detailed consideration of the matter, and shall inform the grievant and the appropriate administrator(s) promptly of this decision.

If the FRC decides that detailed consideration of a grievance is in order, it shall expeditiously investigate the matter in the manner that it deems appropriate. If the Committee finds that there are grounds for formal interviews, it shall conduct such interviews under source confidentiality safeguards identical to those practiced by the Faculty Committee on Tenure and Academic Freedom (CTAF) **or the Committee on Appointments and Promotions (COAP)**. Only WPI personnel may participate in such interviews.

The FRC, in carrying out its investigation, may appoint *ad hoc* committees of investigation, reporting to it, and consisting of Faculty Members with tenure who may, but need not, be members of the FRC. The FRC shall be free to discuss the grievance with the Provost and the President.

If the grievance arises from non-renewal of a tenure-track appointment prior to tenure review and alleges infringement of academic freedom either prior to the decision or in the process surrounding the decision, the FRC shall first request a finding on that issue from CTAF. The FRC may not issue its report until receiving that finding.

If the grievance arises from denial of tenure **or promotion** and alleges infringement of academic freedom either prior to the decision or recommendation or in the process surrounding the decision or recommendation, the FRC will not consult CTAF **or COAP**, but may employ its powers of investigation and authority to conduct interviews in order to assess the merits of the academic freedom issue and the extent to which that issue bears on its ultimate report and recommendations.

In determining whether a decision or recommendation that is the subject of a grievance was affected by improper procedure, the FRC may examine whether the decision or recommendation by an administrator,

committee, or other faculty body was the result of adequate consideration in terms of the relevant standards of the WPI. In no case shall the FRC substitute its judgment for that of the maker(s) of the original decision or recommendation.

If the FRC concludes, after detailed consideration of a grievance, that the allegations in it have been established in full or in part and that the aggrieved matters have affected the decision at issue, then the Committee has the power to require of the maker(s) of the decision or recommendation that is the subject of the grievance that he or she or they reconsider this decision or recommendation to the extent that it is affected by the established allegations. The conclusion of the Committee, its recommendations, the basis for those recommendations, and, if appropriate, requests for reconsideration shall be recorded in a report, and this report shall be provided to the grievant, the maker(s) of the questioned decision or recommendation, and the President. The outcome of a reconsideration required by the FRC shall be promptly reported to the Committee.

In the event that, **for a tenure candidate,**’s **the Joint Tenure Committee, or, for a promotion candidate, the Joint Promotion Committee,** conducts a reconsideration of a case, it shall use only the body of documents available during the first hearing of the case, without addition, deletion, or embellishment, except for the FRC report on the case and any other information the Joint Tenure **or Promotion** Committee wishes to obtain using its normal procedures, provided such additional information pertains directly to issues raised in the FRC report.

If the reconsideration(s) required by the Committee lead to the same negative decision as that which generated the grievance, the grievant may make a final appeal to the President, who may reverse or uphold the decision.

#### DATES FOR FILING OF A GRIEVANCE

For grievances arising from non-renewal of a probationary appointment, the grievance must be filed within ten business days after the applicable latest non-renewal notification date as stipulated in the Faculty Handbook, in the section entitled “Appointments and Reappointments of Tenure Track Faculty”.

For grievances arising from a negative tenure **or promotion** decision, the grievance must be filed within ten business days after that meeting of the Board of Trustees (usually February) at which the Provost and President present their tenure **and promotion** decisions for Board approval, ***or ten days after the tenure or promotion candidate is notified by the Provost of the negative decision, whichever is later.*** The FRC is charged with reviewing a grievance in a prompt and timely manner, with the intent that it will issue its report prior to the close of the academic year in which the filing was made. Should a grievance be pending at the close of the academic year, its resolution will continue to be the responsibility of the original receiving committee, notwithstanding the election of a new committee; see Bylaw One, Section IX.

The filing of a grievance or the granting of a reconsideration as an outcome of that filing in no way extends the period of employment beyond that which would apply if no grievance were filed, nor do filing and reconsideration in any way entitle the grievant to automatic tenure through AAUP rules.

#### Rationale:

This motion is made in direct response to an important recommendation made by the Task Force on Academic Promotion (in its report of October 2015), in which the Task Force proposed “...that a mechanism be instituted to appeal a negative decision for promotion based on procedural grounds, but not based on the merits of a case.”

The motion extends the process by which negative tenure decisions may currently be appealed to include an appeal process for negative promotion decisions, as well. The extension to negative promotion decisions is parallel to the existing procedure for negative tenure decisions in that it applies only to decisions that are alleged to have resulted from a violation of academic freedom, improper procedure, or discrimination. However, unlike tenure cases considered by the Committee on Tenure and Academic Freedom (CTAF), promotion cases considered by the Committee on Appointments and Promotions

(COAP) include those for continuing non-tenure track faculty members as well as for tenured and tenure track faculty members. For this reason, the proposed appeal process for negative promotion decisions applies to continuing non-tenure track faculty members as well as to tenured and tenure track faculty members.

The motion also updates the language defining the grounds for discrimination. This language is consistent with WPI's current Human Resources policy on discrimination at:

<https://www.wpi.edu/about/policies/equal-opportunity-anti-discrimination-harassment>)

and explicitly protects against discrimination “based on race, sex, age, color, national origin, religion, genetic identity, disability, gender identity or expression, marital or parental status, sexual orientation, transgender status, veteran status, or any other protected status.”

Finally, the motion contains modifications to Part One, Appendix B (Operational Guidelines for the Faculty Review Committee) of the Faculty Handbook that amount to straightforward editorial changes that ensure that the language in Appendix B is in parallel to corresponding language in Part One, Bylaw One Section IX describing the function of the FRC.

**Date:** May 9, 2017

**To:** WPI Faculty

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

**Re:** Motion to modify policies related to Academic Standards for Graduate Students

**Motion:** On behalf of Committee on Graduate Studies and Research, I move that the Graduate Catalog sections related to Academic Standards and Degree Requirements be modified, as described below.

**Description of Proposed Modifications:**

We propose to modify two sections, located on pages 16 and 21 of the Graduate Catalog. In the first section, the current and replacement text are listed. The second section (page 21) simply highlights the changed text, since the changes are very minor.

***First Proposed Modification:***

**Current text** (pg. 16):

Students must maintain high academic standards in all their program activities. After attempting 12 credit hours, all students must maintain an overall grade point average (GPA) above 2.75 to be considered as making satisfactory progress.

If a student's overall GPA falls to 2.75 or below, the student and advisor are notified by the Registrar that the student is not making satisfactory progress.

If the overall GPA of any student falls below 2.65, the Registrar will inform the student that all future registrations will be given grades only on a pass/fail basis unless the department Graduate Committee intervenes.

If the overall GPA of any student falls below 2.50, the student is removed from the program unless the department Graduate Committee intervene.

A student is expected to expend at least 56 hours of total effort (including classroom time) for each graduate credit. This means that a student in a 3-graduate credit 14-week course is expected to expend at least 12 hours of total effort per week. A student in a 2-graduate credit 7-week course is expected to expend at least 16 hours of total effort per week.

**Proposed text:**

To be considered in good academic standing, graduate students must maintain a cumulative program GPA of 3.0. This includes all work taken since matriculation, and any coursework taken before matriculation approved to count toward the degree. Students are reviewed at the conclusion of each semester they are enrolled. Students who fall below the minimum standards of 3.0 cumulative program GPA will move down one level of standing (e.g. satisfactory to warning, warning to probation, probation to dismissal).

If a student earns a grade lower than C in three or more courses, or if the cumulative program GPA falls at or below 2.75, the student is academically dismissed.

Academic Warning: Students have one semester of course work to bring their cumulative program GPA up to 3.0. Students who do not meet the minimum program GPA upon the next review will move down to Academic Probation.

Academic Probation: Students have one semester of course work to bring their cumulative program GPA up to 3.0. Students who do not meet the minimum program GPA upon the next review will move down to Academic Dismissal.

Academic Dismissal: Students are academically withdrawn from the University. Students may appeal dismissal by submitting a petition to the University Registrar.

Academic dismissal appeal procedure: Student petitions will be reviewed by the Committee on Graduate Studies and Research. A representative from the student's home department will be present during the appeal process. This petition must be submitted with any supporting documentation no later than one week before the start of the following semester.

A student is expected to expend at least 56 hours of total effort (including classroom time) for each graduate credit. This means that a student in a 3-graduate credit 14-week course is expected to expend at least 12 hours of total effort per week. A student in a 2-graduate credit 7-week course is expected to expend at least 16 hours of total effort per week.

### ***Second Proposed Modification:***

**Proposed Changes to Degree Requirements** (pg. 21) (with changes underlined and ~~struck-through~~)

General Requirements for All Advanced Degrees

All degree requirements must be satisfied before the degree is awarded. Exceptions to general and specific degree requirements or to other rules may be made under special circumstances, but only by the Committee on Graduate Studies and Research (CGSR).<sup>1</sup> Requests for exceptions are to be made by written petition to that committee.

At the time the degree is awarded, the student must have been admitted to the graduate program of the degree-granting program. Administratively, a degree granting program may be a department or a program.

A minimum of two-thirds of the required graduate credit for an advanced degree must be earned at WPI.

~~For the Master of Mathematics, the student must have a program GPA of 2.9 or greater. For all other degrees,~~ For all degree programs the student must have a program GPA of 3.00 or greater.

In applying for graduation, the student must specify by year which graduate catalog contains the rules being satisfied. These rules may be those in place on the date of the student's matriculation, those in place on the date of the student's application for graduation, or those in place in a single graduate catalog in effect between the dates of matriculation and graduation.

After the Application for Degree is submitted, all advanced degrees are subject to the final approval of the Registrar's Office, which determines if the student has satisfied the letter and intent of the requirements for advanced degrees.

The Registrar's Office submits a candidates list to CGSR who make their recommendations for the approval of advanced degrees to the faculty of the institute, which in turn recommends to the president and trustees for their final approval the names of students who should be awarded advanced degrees.

~~Requirements for the Master of Business Administration and Master of Mathematics for Educators appear under the descriptions of the awarding programs.~~

**Rationale:**

The current policy allows graduate students to be below graduation standards without any warning that they are at risk. This change would both ensure that we are doing our due diligence by identifying students at risk and giving them opportunities to improve and that the highest quality students continue to pursue degrees at WPI. Additionally, a committee hearing of appeals for dismissal would mirror Undergraduate processes and ensure consistency in decision making. The changes to degree requirements ensures a consistent standard across all departments.

**Impact on Degree Requirements:** This motion will not impact degree requirements for any program except for the MME program. For this program, it raises the minimum GPA by 0.1 point.

**Resources and Anticipated Instructors:** No new resources needed

**Implementation Date:** Implementation date for this action is the 2017-2018 academic year.

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Graduate Studies and Research (Prof. Troy, Chair)  
**Re:** Motion to modify policies for teaching and research assistantships for graduate students

**Motion:** On behalf of the Committee on Graduate Studies and Research, I move that the financial information in the graduate catalog regarding teaching and research assistantships for graduate students be modified, as described below.

**Description of the Proposed Modifications:**

Financial Information section of the 2016-17 Graduate Catalog (p. 15)

Current First paragraph

Financial assistance to support graduate students is available in the form of teaching assistantships, research assistantships, fellowships, internships, and loans. Entering students are awarded either teaching or research assistantships or fellowships will receive official notification pertaining to the type and level of financial assistance from the Graduate Studies Office.

Revised proposed text:

Financial assistance to support graduate students is available in the form of teaching assistantships, research assistantships, fellowships, internships, and loans. When graduate students are awarded teaching or research assistantships or fellowships that are processed through WPI, the student will receive official notification pertaining to the type and level of financial assistance from the Graduate Studies Office.

Fellowships are defined as full financial support for 12 months. They include a stipend and full tuition of at least 9 credits per semester during the academic year. In summer, there is typically no tuition offered but the fellowship recipient maintains the same stipend.

Teaching Assistants are almost always for a full academic year of 9 months (fall and spring, or for students who begin in January, they would be for spring and at least the following fall), and include both a stipend that meets the minimum level, and full tuition of at least 9 credits per semester. Exceptions are made under special circumstances and must be approved by the Dean of Graduate Studies. Some approved exceptions would include: 1) the student is graduating midway through the year, 2) the support is split between RA and TA for different semesters.

Research Assistants are typically for 9 or 12 months, and must include a stipend that meets the minimum levels required for that type of student, and full tuition of at least 9 credits per semester.

It is possible to combine multiple sources of support. For example, a student may be a Teaching Assistant for the 9 month academic year and a Research Assistant for the 3 summer months.

For TAs and RAs that have already completed the number of credits required for their pending graduate degree, they may be offered less than 9 credits of tuition, as long as the amount is commensurate with their maintaining full-time student status.

**Rationale:**

This provides additional detail and clarification of graduate student support policies.

**Implementation Date:** 2017-2018 academic year

**Resources needed:** No new resources

**Date:** May 9, 2017

**To:** WPI Faculty

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

**Re:** Motion to clarify TOEFL policy for Graduate TAs

**Motion:** On behalf of the Committee on Graduate Studies and Research, I move that the practices regarding TOEFL scores and Graduate TAs be modified in the Graduate Catalog, as described below.

### **Description of the Proposed Modifications:**

#### **According to our current policies:**

For admission, a TOEFL of 84 on the internet-based test is required, or a score of 7.0 overall on the IELTS test, with no subscore lower than 6.5. (Note- our IELTS score is already more stringent, and this is the less common test. An IELTS of 7.0 is considered to be equivalent to 94-101 on the TOEFL scale.) We do not currently mention the subscores in our admission requirements.

**The current graduate catalog text reads:** “These are the minimum scores for admission to WPI; higher scores are required for teaching assistants.”

#### **Proposed Catalog Text:**

1. In the section of the graduate catalog that relates to “Admission Information”, we propose to add the following sentence “Students being considered for a Teaching Assistant position will have a higher required minimum TOEFL. Please see the section on Financial Information/Teaching Assistantships for more details”.
2. In the section of the graduate catalog that relates to “Teaching Assistantships”, we propose to add the following language “The minimum TOEFL (internet-based test) for Teaching Assistants is 100, with no subscore (Reading, Listening, Speaking, and Writing) below 20. All Teaching Assistants will be given the SPEAK test upon arrival at WPI. If they score below the minimum (54), they will be given the opportunity to enroll in an ESL class. Students who do not meet the minimum score and do not enroll in ESL will not be allowed to continue as Teaching Assistants.”

#### **Rationale:**

The intention of this motion is to document and clarify what is already being done and has worked well for the past 15 years. Currently, no TOEFL score is specified for TAs in the graduate catalog. Graduate Studies has operationally had a guideline of a minimum score of 100, which dates back to at least 2002. This score does not appear anywhere in the graduate catalog

Note 1: Although WPI collects data on the four subscores, we have not used this data as part of our TA criteria. The subscore can be helpful because a review of our data shows that the speaking test tends to be the lowest. For all international students admitted from 2012-2015, the average speaking subscore was 21.7, and the average reading subscore was 26.5.

Note 2: It has been our practice to ask students to take ESL when they do not meet the minimum score, but this was difficult to enforce since it was not a policy.

**Implementation Date:** 2017-18 Academic Year

**Resource Needs:** None required. This change reflects our current policy. Staff from the International House are involved in testing and teaching non-native English speakers.

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Graduate Studies and Research (Prof. Troy, Chair)  
**Re:** Motion to modify Internships section of Graduate Catalog and add a course designator

**Motion:** On behalf of the Committee on Graduate Studies and Research, I move that several sections of the Graduate Catalog related to Internships be modified, and that two new course designators be added for Master's and PhD internships, all as described below.

### **Description of Proposed Changes:**

1. Graduate catalog text on Internships will be deleted from the Financial Aid section and a new section "Graduate Internship Experience" will be added.

*The following sub-section (in ~~striketrough~~) on Internships (and associated sub-sub-sections contained within) located on Pages 15-16 of the Graduate Catalog will be entirely removed:*

#### **Internships**

~~Graduate internship programs are offered in several disciplines. A graduate internship is a short term work assignment (3 to 9 months) in residence at a company or other external organization that forms an integral part of a student's educational program. Students participating in graduate internships must be registered in a specific course. An internship will appear on the transcript either with or without credit. Students may not participate as interns at their place of employment.~~

#### **Special Notes for International Students:**

~~An international student on an F-1 visa must maintain full-time status for the duration of their graduate program. If the student is participating in a full-time graduate internship (one that is not administered through the Career Development Center), the student must be registered for nine credits. International students with F-1 visa status may apply for two types of practical training:~~

~~1. Curricular Practical Training (CPT): CPT is used for internships and cooperative education while students are pursuing their degrees. CPT is authorized by the university and the requirement is that the internship or coop is an integral part of an established curriculum. Internships should be for credit.~~

~~2. Optional Practical Training (OPT): OPT is typically used by students for one year of employment after completion of degree. It can also be used in part for summer jobs or part-time employment during the academic year if employment is in the student's field of study. OPT requires approval by U.S. Customs and Immigration Services.~~

*The following sub-section (in underline, with ***bold italics*** added and ~~striketrough~~ deleted since the original May 2 distribution) on Graduate Internship Experience (and associated sub-sub-sections contained within) be added to Page 20 of the Graduate Catalog (after the Military Leave of Absence sub-section):*

#### **Graduate Internship Experience**

Graduate internship experiences are available across several programs of studies at WPI in order to enhance the professional development of both Masters and Doctoral students. The graduate internship is an integral part of a graduate curriculum, and is a short-term and temporary work assignment in residence at a company or other *external*

organization that forms a complementary part of a student's educational program. An internship will appear on the transcript with a minimum of 0 credits and a maximum of 3 credits (as determined by the department/program), and will only show a pass/fail grade. All students require the approval of their faculty advisor-of-record in order to participate in an internship. Furthermore, the student and their faculty advisor-of-record will define concrete performance metrics and objectives to be achieved during the internship prior to the student departing for this experience. Students are also required to attend a pre-departure internship orientation in preparation for their internship experience. Finally, a final reflection/evaluation piece must be submitted to the Career Development Center (CDC) at the end of the internship experience, after which the faculty advisor of record will evaluate the piece and assign the pass/fail grade. Guidelines on preparing a final reflection piece are available at the CDC.

The graduate internship experience must align with the student's plan of study and related to the specific graduate degree program. Graduate students already employed full-time or part-time may not participate as interns at the same place of employment. Since the internship must be performed at an external site, WPI would not be considered an acceptable sponsor for a graduate internship. Teaching Assistants may not be on internship during the same time period during the academic year as when they as serving as a TA, but may pursue an internship over the summer.

The graduate internship experience is not a requirement for all graduate students but rather an option available to all graduate students enrolled in graduate programs that permit internships. Graduate students may pursue graduate internship experiences consisting from a minimum of 0 credits to a maximum of up to 3 credits per degree (as determined by the department/program). For-credit internship experiences are only for matriculated students. Graduate internships may not be applied to multiple degrees (i.e., BS/MS). Resources regarding graduate internship experiences and job search tools are highlighted in the Career Development Center subsection in the Graduate Catalog. Enrollment in the graduate internship experience must adhere to established add/drop deadlines.

1) **For Masters Students:** Students enrolled in a Master's program may participate in the graduate internship experience after successfully completing their first year of studies at WPI, providing that they are in good academic standing. The student must have completed at least one semester of coursework in the field of graduate study at WPI before pursuing an internship. With approval of the faculty advisor-of-record, Master's students participating in a graduate internship should register for graduate internship course designated 5900.

2) **For PhD Students:** Students enrolled in a PhD program may participate in the graduate internship experience after successfully completing their qualifying/diagnostic examination, providing that they are in good academic standing. With approval of the faculty advisor-of-record, PhD students participating in a graduate internship should register for graduate internship course designated 6900.

### **Special Notes for International Students:**

An international graduate student on an F-1 visa must maintain full-time status for the duration of their graduate program. International students with F-1 visa status may apply for two types of practical training:

1. Curricular Practical Training (CPT): CPT is used for graduate level internships while students are pursuing their degrees. CPT is authorized by the university and the requirement is that the internship is an integral part of an established curriculum. Internships should be for credit.

2. Optional Practical Training (OPT): OPT is typically used by students for one year of employment after completion of degree. It can also be used in part for summer jobs or part-time employment during the academic year if employment is in the student's field of study. OPT requires approval by U.S. Customs and Immigration Services.

*The following sub-sub-section (in underline) on Internship Resources is to be added to the Career Development Center sub-section of the Graduate Catalog:*

### **Internship Resources**

Resources are available at the Career Development Center (CDC) for graduate students seeking graduate internship experiences during their studies at WPI. The CDC maintains an extensive database of companies and other external organizations interested in supporting graduate students in their professional development via internships. All WPI students have access to this database, as well as the ability to apply to posted opportunities. To find out more, please contact the CDC.

2. Course designators will be created to allow students to register for up to 3 credits of Graduate Internship. Individual Departments/Programs will be able to “opt in” if they would like to offer internships.

**Proposed Course Description** (with ~~strickthrough text~~ deleted since the original May 2 distribution):

(Note: XYZ = Program designation. Number of credits is at the discretion of each Department/Program.)

#### ***XYZ 5900 “Master’s Graduate Internship Experience”***

(\*\*\* Credits)

A Master’s graduate internship experience is designed to enhance the professional development of the graduate student. Master’s graduate internship experiences must align with the student’s plan of study. A Master’s graduate internship experience can be pursued at either a company or some external organization. Students interested in pursuing a Master’s graduate internship experience must register for XYZ 5900, which is subject to approval by the faculty advisor-of-record (pending administrative checks by the Registrar and the Career Development Center (CDC)) to ensure that student’s program of study supports graduate internship experience and that the proposed internship aligns with student’s graduate studies. ~~A final reflection piece describing the professional development resulting from the graduate internship experience is due to the faculty advisor-of-record via the CDC at the end of the internship.~~

#### ***XYZ 6900 “PhD Graduate Internship Experience”***

(\*\*\* Credits)

A PhD graduate internship experience is designed to enhance the professional development of the graduate student. PhD graduate internship experiences must align with the student’s plan of study. A PhD graduate internship experience can be pursued at either a company or some external organization. Students interested in pursuing a PhD graduate internship

experience must register for XYZ 6900, which is subject to approval by the faculty advisor-of-record (pending administrative checks by the Registrar and the Career Development Center (CDC)) to ensure that student's program of study supports graduate internship experience and that the proposed internship aligns with student's graduate studies. ~~A final reflection piece describing the professional development resulting from the graduate internship experience is due to the faculty advisor-of-record via the CDC at the end of the internship.~~

### **Rationale:**

An emphasis on supporting graduate programs is an important component of WPI's Strategic Plan, Elevate Impact. One component of the PhD Plan is the evolution of the graduate student internship into a professional development experience that would help further promote the growth of our PhD students as future innovators and leaders in a variety of careers, including academia, industry, and government. Many of the opportunities are also suitable as career-enhancing experiences for Master's students. The new catalog language will clarify that Master's and PhD students are eligible for internships.

The revised text is meant to be more accessible graduate students and faculty. The previous location of the graduate internship description (under financial aid) is no longer desirable, since the goal is to promote the importance of the graduate student internship as a professional learning experience, rather than just a source of financial support. Note that the text describing the next graduate internship experience will be described in the adjoining motion.

Graduate internships provide valuable professional training and development to graduate students. Although graduate internships are already occurring in several areas, we do not have uniform and consistent policies and practices that would apply to all graduate students wishing to pursue internships. Consequently, it is proposed that this resource be described in the Registration Information and Procedures section of the Graduate Catalog. Furthermore, to help streamline the process of supporting the professional development of the student with respect to a potential graduate internship experience, the proposed addition contains the following information:

- Graduate internship experiences are available to both Master's and Doctoral students enrolled in graduate programs that permit internships.
- Graduate internship experiences can only be obtained after the student completes one year of studies at WPI (Master's students) or after successfully completing their qualifying/diagnostic examination (PhD students).
- Timeframe for graduate internship experiences range from 3 to 6 months.
- A registration process is indicated, where the interested student registers for course designation 5900 (Master's students) or course designation 6900 (PhD students). The student and the faculty advisor-of-record work together on defining performance metrics and objectives that will be used to evaluate the internship experience. Once these metrics and objectives have been defined, the faculty advisor-of-record approves the application for a graduate internship experience.
- The graduate internship must closely align with the student's plan of study.
- Graduate internship experiences are not required.
- Students could participate in one graduate internship per graduate degree. For instance, if a student pursues a Master's degree and a PhD degree at WPI, that individual is eligible for two internships, one for each degree.

- Application resources for graduate internship experiences are available at the Career Development Center.
- Additional information for international students included as before.
- Pre-departure internship orientation required of all students.
- Guidelines on preparing a final reflection piece are available at the CDC.
- Registration process for enrolling in a graduate internship must adhere to established add/drop deadlines.

The proposed sub-sub-section highlights the availability of the Career Development Center (CDC) resources to graduate students with respect to obtaining graduate internship experiences. In particular, CDC database resources containing internship postings from various employers is an important facility that can potentially match many graduate students interested in pursuing internships with companies and other external entities that can help promote their professional development by providing experiences that align well with their plan of studies.

The Master's and PhD graduate internship experience course designations are unique courses that register the Master's or PhD student's experience as part of their professional formation here at WPI. At the moment, only four programs possess unique course designations specifically for graduate internships, each with its own language and processes. Other graduate programs that permit graduate internships simply use course designations such as independent research and directed research to have the students recorded for these experiences. Unfortunately, the lack of uniformity for designating a specific graduate internship experience makes it difficult for the graduate student interested in pursuing an internship experience to understand the expectations and responsibilities involved, as well as their faculty advisors. This proposed course designation provides this information for Master's and PhD students enrolled in this graduate program. The information provided here is also uniformly included in other graduate programs here at WPI that also allow for graduate internship experiences.

**Resources:**

No new resources are requested. Our existing infrastructure for the advertising of and application to off-campus internships available at the Career Development Center will be leveraged for graduate internship experiences. International House will use current processes to ensure that international students interested in internship experiences will receive the correct processing and documentation. New graduate internship experience course designations for graduate programs offering such experiences are included as part of this overall set of motions.

**Timeframe:**

AY2017/2018

**Date:** May 9, 2017

**To:** WPI Faculty

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

**Re:** Motion to modify the enrollment policies and course limits for non-degree students

**Motion:** On behalf of Committee on Graduate Studies and Research, I move that the enrollment policies and course limits for non-degree students be modified, as described below.

**Description of Proposed Changes:**

**Proposed revisions** (page 13 of 2016-17 Graduate Catalog, with additions underlined and deletions ~~struck through~~)

**Advanced Study for Non-Degree Students**

Individuals with earned bachelor's degrees may wish to enroll in a single course or a limited number of courses prior to applying for admission to either a certificate or degree program. Non-degree students may choose to be graded conventionally (A, B, C), or on a pass/fail basis. Pass/Fail grading must be chosen at the time of registration, and courses taken on the pass/fail basis are not transferable to any master's degree program.

~~Non-admitted~~ degree students may take a maximum of nine credits ~~four graduate courses~~ and receive letter grades in most departments. ~~See department descriptions for specific information.~~ Once this maximum of nine credits is reached, additional course registrations will be changed to pass/fail and will not be used for degree credit.

The fact that a student has been allowed to register for graduate courses (and earn credit) does not guarantee that the student will be admitted to that department's certificate or degree program at a later date. Students are therefore encouraged to apply for admission to a degree or certificate program prior to any course registration.

**Rationale:**

There are certificates that require only 12 credits; we should not allow students to complete all the courses for a certificate without applying. Since we cannot necessarily tell which program a student is working toward before applying, it makes the most sense to impose a limit regardless of department so that communications can be clear and to facilitate our ability to reach out to these students in a timely manner and encourage them to apply.

**Impact on Degree Requirements:** This motion will not impact degree requirements.

**Resources and Anticipated Instructors:** No new resources needed

**Implementation Date:** Implementation date for this action is the 2017-2018 academic year.

**Date:** May 9, 2017

**To:** WPI Faculty

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

**Re:** Motion to modify policies related to full-time status for Graduate Students

**Motion:** On behalf of Committee on Graduate Studies and Research, I move that a new one-credit course ID 700 (Continuing Graduate Student Status) be created to identify “continuing full-time students,” and corresponding language in the Graduate Catalog be modified to explain the course, as described below.

**Description of the Proposal:**

Add the following new course ID 700:

***ID 700 Continuing Graduate Student Status (1 cr.)***

This course allows a student to maintain full-time student status after registration for all degree credits. To register, students should fill out the Continuing Student Status form and obtain the signature of their Graduate Coordinator/Department Head.

Add the following text to page 19, column 2 of catalog:

Students must adhere to the enrollment policy to maintain active status at WPI. Should a student reach a point where they no longer have any required credits to register for, but are still completing degree requirements (e.g. completing an incomplete course, a thesis, a dissertation), they must register for ID 700, which carries a tuition fee equal to ½ a credit.

**Rationale:**

If a student has registered for all credits needed to complete the degree, but is continuing to work on a thesis, dissertation, or project, they must continue to register for one credit until the work is complete. Alternately, they do not register, and are subject to termination of enrollment per the enrollment policy.

**Impact on Degree Requirements:** This motion will not impact degree requirements.

**Resources and Anticipated Instructors:** No new resources needed

**Implementation Date:** Implementation date for this action is the 2017-2018 academic year.

## **Appendix A: Consent Agenda Motions**

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Subject:** Motion to add SS1505 Games for Understanding Complexity

**Motion:** On behalf of the Department of Social Science and Policy Studies, the Committee on Academic Operations recommends and I move that SS1505 Games for Understanding, as described below, be added.

**Proposed Course Description:**

**SS1505. GAMES FOR UNDERSTANDING COMPLEXITY (Cat. I)**

This course addresses the theory and practice of developing solutions to complex social and environmental problems through interaction with roleplaying games and computer simulations designed to promote learning and improve decision-making. By interacting with a selection of games and case studies, students will learn to recognize the systemic causes of complex social and environmental problems and gain experience developing and using simulations to test policies for creating sustainable futures. Special attention will be given to appropriate modeling practices and the design of simulation experiments. The course is run in a laboratory format in which students work in groups to play games, develop simulation models and present them to the class for feedback before they revise and refine their work iteratively for final evaluation.

Recommended background: None

Students who completed SS150X cannot receive credit for SS1505.

**Anticipated Instructor:** Prof. Khalid Saeed, though others could also teach this course.

**Rationale:**

This course takes advantage of the expertise of Prof. Khalid Saeed to offer a game-based introduction to the study of complex social, economic, and environmental problems. It is designed to appeal to students looking to fulfill part of their two course Social Science Requirement, as well as provide an introduction to the field of system dynamics, which can be further pursued in an additional general education course, as a minor, or in project work. The course enrolled 38 students in its first experimental offering in D16. We expect it will enroll the same on a permanent basis. (It is also currently offered in D17, however it was a late addition to the schedule in order to provide additional opportunities for first year students, and the current enrollment (12) is thus not indicative of its potential.)

**Previous Offering:**

This course was previously offered as SS150X in D16. Outcomes from questions 1, 2, and 9 on the student course evaluations were as follows:

Q1. My overall rating of the quality of this course is	3.52
Q2. My overall rating of the instructor's teaching is	3.74
Q9. The amount I learned from the course was	3.14

It is worth noting that in the SSPS Dept. we do not put much stock in Q9 for general education courses. We are not focused on conveying large quantities of information but on getting students to think differently.

Instructor feedback and reflections:

1. An experimental version of the course was offered in D16. Enrollment of 38 students exceeded expectations and was limited by the capacity of the room allocated for the class. Enrolled students were requested to drop the course if possible in view of the room limitations. Many complied that still left the number at 38. The classroom was not only too small to accommodate all interested students, it was also not furnished appropriately to run the games I used in the course. This experience has led me to specifying the room appointments and also capping the enrollment in future offerings to suit the room capacity.
2. While the course has no recommended background, the number of first year students enrolled in the course was not substantial. I would like in future to especially reserve seats for first year students so they can experience the system thinking emphasis of the course early in their experience at WPI and build on it in their other work.
3. While a textbook was prescribed and selected readings also assigned for specific course sessions, the students were neither queried about the readings nor tested since the modeling homework assigned was substantial. The level of the prescribed textbook was also too high for a beginner level undergraduate course introducing systems thinking. I will change the textbook to a systems-thinking primer and include some discussion of the readings in the class to create student interest. I still plan to include supplemental reading materials specific to each lesson in addition to the text.
4. The course is aimed at cultivating systems thinking and learning fundamentals of systems modeling. Some observations on learning outcomes and impact:
  - a) One of the students wrote an article with me for the system dynamics conference that has received a few citations. He also went on to join the SDM program at MIT.
  - b) One of the students completed a fascinating undergraduate project on recovery options after the recent devastating floods in Bangkok. His work was also published in the refereed proceedings of the system dynamics conference.
  - c) One of the students is currently hired by one of my faculty colleagues in the school of management to assist with a system dynamics modeling project.
  - d) In the past many students who took undergraduate courses in system dynamics went on to do their graduate work in other universities and join teaching and research careers. Two of our graduates have completed a PhD at MIT. One of them works with the Jet Propulsion Laboratories at the Caltech. Another finished PhD at Univ of Illinois, Indiana-Champaign and now serves on the faculty of UNC. Another is a researcher at Sandia Labs. Students with undergraduate systems thinking exposure at WPI have also

gone on to join Lincoln Labs at MIT and at other think tanks and research and consulting groups.

- e) Undergraduate exposure to systems thinking is one of a kind experience that although of great value to the students is uncommon.<sup>1</sup> The National University of Singapore has established a unique undergraduate program that subsumes system thinking training. WPI is one of the very few US schools to attempt to offer systems thinking courses to our undergraduate students. Pavlov et. al. (2014) describe in detail the WPI effort to offer systems thinking based curricula at all levels.<sup>2</sup> The proposed course is a part of this effort.

**Implementation Date:** Implementation date for this action is term D of the 2017-2018 academic year. It will then be offered every year (as per Category I courses).

**Resource Needs:**

Please summarize basic resources needed to deliver this course, including the following:

- Builds off the expertise of Professor Saeed
- 40-person classroom with basic electronic set up and moveable tables and chairs
- No special laboratory space needed
- No special library resources needed
- No special information technology needed

Prof. Saeed will teach this course as part of his standard course load.

**Impact on Distribution Requirements and Other Courses:** This entry level course will count toward the Social Science Requirement and the Minor in System Dynamics.

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<sup>1</sup> Barlas, Y. Formal System Dynamics Education in Universities. In Proceedings of the 1993 International System Dynamics Conference, Cancun, Mexico, July 1993.

<sup>2</sup> Pavlov OV, Doyle, JK, Saeed, K, Lyneis, JM, Radzicki, MJ. 2014. The Design of Educational Programs in System Dynamics at Worcester Polytechnic Institute (WPI). *Systems*. 2(54-56)

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Subject:** Motion to remove ME 4860 Food Engineering

**Motion:** On behalf of the Mechanical Engineering Department, the Committee on Academic Operation recommends and I move that ME 4860 Food Engineering be removed.

**Current Course Description:**

ME 4860. Food Engineering. Cat II An introductory course on the structure, processing, and properties of food. Topics covered include: food structure and rheology, plant and animal tissues, texture, glass transition, gels, emulsions, micelles, food additives, food coloring, starches, baked goods, mechanical properties, elasticity, viscoelastic nature of food products, characteristics of food powders, fat eutectics, freezing and cooking of food, manufacturing processes, cereal processing, chocolate manufacture, microbial growth, fermentation, transport phenomena in food processing, kinetics, preserving and packaging of food, testing of food. Recommended Background: ES 2001 or equivalent. This course will be offered in 2016-17, and in alternating years thereafter.

**Other related proposed changes to catalog:**

Omit from course listing, Materials Science concentration, and Materials Science minor. Chemical Engineering will remove it from their Materials Concentration; they have agreed to the change.

**Rationale:**

The ME department has no remaining faculty focused on this specialty within materials. In materials engineering within mechanical engineering, we still have eight 4000 level courses which can be used as electives for distribution requirements, concentrations, and minors.

**Impact on Distribution Requirements and Other Courses** In the area of materials engineering within mechanical engineering, we still have eight 4000 level materials courses which can be used as electives for distribution requirements, concentrations, and minors.

**Implementation Date:** Implementation date for this action is the end of 2016-17 Academic year.

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Subject:** Motion to remove the AE designation of AE/ME 3901 Engineering Experimentation

**Motion:** On behalf of the Aerospace Engineering Program of the ME Department, the Committee on Academic Operations recommends that the AE designation be removed from AE/ME 3901 Engineering Experimentation, so that the course will be listed as ME 3901 under the Mechanical Engineering Course Descriptions and that the course AE/ME 3901 will be removed from the Aerospace Engineering course descriptions. .

**Description of the proposed changes:**

MECHANICAL ENGINEERING  
**AE/ME 3901 Engineering Experimentation**

AEROSPACE ENGINEERING  
~~AE/ME 3901 Engineering Experimentation~~

**Rationale:**

AE/ME 3901 Engineering Experimentation has been offered exclusively by ME faculty; the ME designation will reflect this. In addition, the course is offered every term and already has several sections. The cross listing doubles the number of sections, creating an unnecessary logistical burden.

**Implementation Date:** Implementation date for this action is the 2017-2018 Academic year.

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

**Impact on Distribution Requirements:**

There will be no impact on distribution requirements as a result of this motion. The AE Program will retain ME3901 Engineering Experimentation as a required course.

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Subject:** Motion to revise the Undergraduate Catalog lists of American Studies courses

**Motion:** On behalf of Humanities and Arts Department, the Committee on Academic Operations recommends and I move that the following lists of courses appropriate to both the existing Major “Humanities and Arts with American Studies Concentration” and the proposed new “Humanities and Arts Minor in American Studies” replace the lists as given in the *WPI Undergraduate Catalog 2017-18*, p. 82.

**Description of proposed Changes:**

**New Course List:** First, add the following statement to the end of the first paragraph under “Humanities and Arts with American Studies Concentration” on p. 82 of the *WPI Undergraduate Catalog 2017-18* (the existing statement is generic and vague, and fails to mention the unique AAS Seminar): “American Studies majors (and minors) may earn two-thirds-unit of credit at the 3000-level by being admitted to and completing the competitive AAS fall seminar, which annually accepts twelve Worcester Consortium students. Each spring, HUA faculty publicize the upcoming seminar and endorse WPI applicants. AAS seminars typically enroll two or three students from WPI.”

[Then, following the five Distribution Requirements, this revised course list:]

**List 1. American Antiquarian Society Fall Seminar:**

This competitive seminar, open to a limited number of Worcester Consortium students, features a different visiting professor and a new thematic focus each fall. The seminar is equivalent to two courses in American Studies at the 3000-level; the comparable WPI discipline(s) will be determined by the topic of each seminar. To apply, consult a member of the American Studies faculty early in the preceding D-term.

**List 2. American History:**

HI 2311 American Colonial History  
HI 2313 American History, 1789-1877  
HI 2314 American History, 1877-1920  
HI 2315 The Shaping of Post-1920 America  
HI 2316 American Foreign Policy from Woodrow Wilson to the Present  
HI 2317 Law and Society in America, 1865-1910  
HI 2331 Science, Technology, and Culture in the Early American Republic  
HI 2332 History of Modern American Science and Technology  
HI 2401 U.S. Environmental History  
HI 2910 American Labor History  
HI 3312 Topics in American Social History  
HI 3314 The American Revolution  
HI 3334 Topics in the History of American Science and Technology

**List 3. American Literature:**

EN 2221 American Drama  
EN 2231 American Literature: The Raven, the Whale, and the Woodchuck  
EN 2232 American Literature: Twain to World War I  
EN 2233 American Literature: Modernism to the Present  
EN 2234 Modern American Novel  
EN 2235 The American Dream: Myth in Literature and the Popular Imagination  
EN 2237 American Literature and the Environment  
EN 2238 American Realism

EN 3231 New England Supernaturalism  
EN 3232 The Concord Writers  
EN 3233 Worcester Between the Covers: Local Writers and Their Works  
EN 3234 Modern American Poetry  
EN 3237 Pursuing *Moby-Dick*  
SP/ID 3531 Contemporary US Latino Literature & Culture

**List 4. American Art/Architecture:**

AR 2114 Modern Architecture in the American Era, 1750-2001 and Beyond

**List 5. American Music:**

MU 2719 Jazz History  
MU 2722 History of American Popular Music

**List 6. American Religion:**

\*RE 2721 Religion and Culture  
\*RE 3721 Topics in Religion

**List 7. American Politics, Law, and Policy:**

GOV 1301 U.S. Government  
GOV 1303 American Public Policy  
GOV 1310 Law, Courts, and Politics  
GOV 2302 Science-Technology Policy  
GOV 2310 Constitutional Law

\* Check with an American Studies advisor to determine if this course has an American focus in a given term. To facilitate degree audits by the Office of the Registrar, HUA faculty will create a form by which to approve unlisted courses that have significant focus on the U.S. national experience.

**Rationale:** The current Catalog lists are out of date. Some courses are no longer offered and new ones have been created. New HUA disciplines—AR, MU, RE, and SP—have been added to the scope of American Studies. Moreover, the competitive undergraduate seminar at the American Antiquarian Society, which is mentioned only indirectly in the current *Catalog*, is now explained in detail (see the proposed *Catalog* emendation above, following the heading “New Course List”).

**Impacts on students:** Students will be able to understand requirements, procedures, and course choices more easily with the revised statement and course lists.

**Resource Needs:** No new faculty or other material resources are required to implement the revised list of courses.

**Implementation Date:** HUA would like to implement the new list of pertinent courses for the American Studies Concentration (Major), which would also apply to the proposed new American Studies Minor as soon as CAO and WPI Faculty approval are obtained. Even if the motion is secured after the deadline for revisions for the next WPI Undergraduate Catalog, students could begin immediately consulting the revised list as prepared by HUA staff.

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Subject:** Motion to establish a Minor in American Studies

**Motion:** On behalf of Humanities and Arts Department, the Committee on Academic Operations recommends and I move that a Minor in American Studies, as described below, be established.

### **Catalog Description of the Proposed Minor:**

The Minor in American Studies is for students who choose to continue their studies in a blend of American history, literature, and other fields beyond the Humanities and Arts Requirement without majoring in American Studies, English, history, or other fields in humanities and arts.

The American Studies Minor consists of a total of two units of coursework in Humanities and Arts that focus on *the national experience of the United States*, distributed in the following way: at least two courses in American history (List 2)\* and at least two in American literature (List 3)\*, except that HUA 1411 (Introduction to American Studies) may be substituted for either an EN or an HI course. The two units comprising the American Studies Minor must include a minimum of two 3000-level courses and a maximum of one 1000-level course.

American Studies Minors may earn two-thirds-unit of credit at the 3000-level by being admitted to and completing the competitive American Antiquarian Society fall seminar, which annually accepts twelve Worcester Consortium students. Each spring, HUA faculty publicize the upcoming seminar and endorse WPI applicants. AAS seminars typically enroll two or three students from WPI.

No more than one unit of work for the Humanities and Arts Requirement may be applied toward the American Studies Minor. Any student at WPI is eligible to pursue the Minor in American Studies except for students majoring in Humanities and Arts with a concentration in American Studies.

### **Rationale:**

The Department of Humanities and Arts offers a Major in American Studies but not a Minor, yet a steady handful of students ask about pursuing a Minor in that Concentration. Establishing a Minor in American Studies will answer this demand as well as save a great deal of time for students and advisors alike in preparing proposals to CAO for individually tailored Minors.

By definition, American Studies (which emerged some sixty years ago nationally as a field of study) comprises a range of disciplines in the humanities and arts—most frequently history and literature (as is the case at WPI) but also anthropology, archeology, art, museum studies, music, philosophy, religion, and other disciplines. The HUA Minor in American Studies at WPI will be enriched by including courses that *focus on the national experience of the United States* in art, architecture, history, the history of science and technology, literature, music, philosophy, and religion.

**Impacts on Students:** Students who in past decades have pursued individually designed minors in American Studies had typically completed their Sufficiencies—or, under the current system, did their depth for the HUA Degree Requirement—in either English or History. They then had to

seek out three faculty members who would comprise an advisory committee that would have to endorse the minors. An approved American Studies minor would permit students interested in a multidisciplinary minor in American culture simply to declare a Minor in American Studies without these preparatory steps.

**Resource Needs:** No new faculty or other material resources are required for this Minor.

**Impact on Distribution Requirements and Other Courses:** The minor in American Studies will have no impact on Distribution Requirements.

**Implementation Date:** HUA would like to implement the Minor in American Studies as soon as CAO and WPI Faculty approval are obtained. Even if approval is secured after the deadline for revisions for the next *WPI Undergraduate Catalog*, students could begin declaring a Minor in American Studies without having to prepare an individually designed minor.

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\* Courses approved by the HUA Faculty as suitable for the Minor in American Studies are primarily those listed under “Humanities and Arts with American Studies Concentration” on page 82 of the *WPI Undergraduate Catalog 2017-18*. That list, however, has errors of commission and omission. The HUA Faculty has also identified courses related to American culture in other HUA disciplines (AR, MU, RE, SP) that we wish to add. Accordingly, CAO recommended that we submit a *separate* proposal for revising our corrected and updated course list for both our existing American Studies major and our proposed minor. Such a proposal accompanies *this* proposal for a Minor in American Studies.

For the most part, courses appropriate to the Minor in American Studies can be easily recognized by the term *American* in the course title or catalog description. This minor focuses on the *U.S. national experience*. HUA has a tradition of permitting faculty discretion. When in doubt about the appropriateness of a course to the American Studies Minor, students may consult any of the faculty currently identified as American Studies advisors (**AR:** M. Samson; **MU:** E. Shim; **EN:** K. Boudreau, J. Cocola, W. Mott, L. Schachterle, S. Vick; **HI:** W. Baller, S. Bullock, C. Clark, J. Cullon, J. Hanlan, D. Spanagel; **RE:** B. Eddy.)

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Subject:** Motion to add Independent Study course designations by subject and level-of-study

**Motion:** The Committee on Academic Operation recommends and I move that Independent Study course designations by subject and level of study, as described below, be added.

**Proposed Course/Catalog Description:**

SUBJECT CODE (e.g. MA, BB) 1999, 2999, 3999, 4999 Independent Study (*Cat. I*)

See **Independent Study** policy in the Undergraduate catalog for information.

**Anticipated Instructor:** as arranged

**Rationale:**

The approved motion to add Independent Study policies to the undergraduate catalog (approved by the Faculty on Nov. 17, 2016) includes the requirement that faculty have appointments in the discipline for which the study will be granted credit, and that no independent study be offered more than twice without approval of the Department Head or Program Director. This can be better facilitated by having the discipline of the independent study in the subject code, as this will allow us to ensure the faculty appointments are correct and report the information easily and efficiently.

The course numbers will clearly determine the level of the study, and also provide consistency across all disciplines. Instructors will be assigned just as they are with sections of regular courses and this will also be reported. Independent study titles, as agreed between student and instructor(s), will appear on the registration and transcript.

This method has an added benefit for students and advisors. Using this method of numbering, degree audits can be programmed to slot the ISUs appropriately as current distribution requirements dictate, or as approved. Currently, all ISUs require manual manipulation to slot as approved on the audit. This will still occur in some situations depending on what has been approved, but in many cases the course can automatically fall in the appropriate area.

Finally, this aligns with best practices in higher education for recording independent study on student records in a transparent, easily trackable way. It will allow discipline and level to be easily identified on a transcript. It will be clearer for students and advisors to monitor progress, and meets accrediting standards that require catalog listings for the academic activities appearing on student transcripts.

**Implementation Date:** Implementation date for this action is the 2017-2018 Academic year.

**Resource Needs:** All resources are as arranged, in keeping with the independent study policy. Rooms are not assigned to independent studies, although space can be requested.

**Impact on Distribution Requirements and Other Courses:** None; existing Independent Study policies and practices remain the same. Some departments will need to remove any independent study listings from the catalog, but none have ever been used (i.e. independent studies have always been built as "ISP-Faculty Initials-Section Number" and have ignored any individual course numbers departments have approved.)

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Subject:** Motion to modify MA 1033 Introduction to Analysis III

**Motion:** On behalf of the Department of Mathematical Sciences, the Committee on Academic Operation recommends and I move that name and description for MA 1033 Introduction to Analysis III be changed, as described below.

**Description of Proposed Changes:**

**Current title and description:**

MA 1033. INTRODUCTION TO ANALYSIS III

This course develops the theory of integration and provides an introduction to series of numbers and series of functions. Topics covered include the Fundamental Theorem of Calculus, integration by parts, change of variable, series, convergence tests, rearrangements of series, sequences and series of functions, power series, Taylor series.

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

MA 1033. THEORETICAL CALCULUS III

This course will cover the same material as MA 1023 Calculus III but from a different perspective. A more rigorous study of sequences and series will be undertaken: starting from the least upper bound property in  $\mathbb{R}$ , the fundamental theorems for convergent series will be proved. Convergence criteria for series will be rigorously justified and L'Hospital's rule will be introduced and proved. Homework problems will include a blend of computational exercises as usually assigned in MA 1023 Calculus III and problems with a stronger theoretical flavor. Recommended background: Differential and integral calculus (MA1021 and MA 1022, or equivalent).

Note: Students can receive credit for this class and MA1023 Calculus III.

**Rationale:**

This motion finally unifies the theoretical counterpart of the latter half of the calculus sequence. These were originally taught as Introduction to Analysis III and IV, with modest attraction for students. This has been replaced by experimental courses MA 143X. Calculus III: A Theoretical Approach and MA 144X. Calculus IV: A Theoretical Approach and in the academic years 2012/13 and 1013/14 with course descriptions equivalent to the "Theoretical Calculus" courses above. This led to a vast increase in enrollment, however the experimental courses have never been made permanent. For the following years the course name was again MA 1033. Introduction to Analysis III, while the actual course content was following MA 143X and MA 144X. This motion (together with its sister motion on Calculus IV) intends to clarify the situation and build on the successful course description.

The motion intends to properly align the course description to the content actually and also introducing a title that might attract more students. (The administration pointed out the courses with "Introduction" in the title draw few students in general, this is corroborated by the actual enrollment numbers of this course, see overview attached.)

**Impacts on students:** There is no impact on students other than an improved understanding of what they can expect from the course as it is currently taught.

**Resource Needs:**

Please summarize basic resources needed to deliver this course, including the following:

- All faculty of Mathematical Sciences are qualified to teach the course.
- A standard classroom seating 30 people in Stratton Hall

- Laboratory: N/A
- Library resources: N/A
- Information Technology: N/A

**Implementation Date:** AY 2017/18, A-term. Course will be taught every year in A-term.

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Subject:** Motion to modify MA 1034 Introduction to Analysis IV

**Motion:** On behalf of the Department of Mathematical Sciences, the Committee on Academic Operation recommends and I move that name and description for MA 1034 Introduction to Analysis IV be changed, as described below.

**Description of Proposed Changes:**

**Current course title and description:**

MA 1034. INTRODUCTION TO ANALYSIS IV (Cat I)

The course provides a rigorous introduction to multivariable analysis. Topics covered include vector algebra, functions of several variables, partial derivatives, gradient, multiple integrals, Green's theorem, Stokes' theorem, divergence theorem.

Recommended background: MA 1033

**Proposed course title and description:**

MA 1034. THEORETICAL CALCULUS IV

This course will cover the same material as MA1024 Calculus IV from a more mathematically rigorous perspective. The course gives a rigorous introduction of differentiation and integration for functions of one variable. After introducing vector functions, differentiation and integration will be extended to functions of several variables.

Recommended background: Theoretical Calculus III (MA1033, or equivalent).

Note: Students can receive credit for this class and MA1024 Calculus IV.

**Rationale:**

This motion finally unifies the theoretical counterpart of the latter half of the calculus sequence. These were originally taught as Introduction to Analysis III and IV, with modest attraction for students. This has been replaced by experimental courses MA 143X. Calculus III: A Theoretical Approach and MA 144X. Calculus IV: A Theoretical Approach and in the academic years 2012/13 and 1013/14 with course descriptions equivalent to the "Theoretical Calculus" courses above. This led to a vast increase in enrollment, however the experimental courses have never been made permanent. For the following years the course name was again MA 1033.

Introduction to Analysis III, while the actual course content was following MA 143X and MA 144X. This motion (together with its sister motion on Calculus III) intends to clarify the situation and build on the successful course description.

The motion intends to properly align the course description to the content actually and also introducing a title that might attract more students. (The administration pointed out the courses with "Introduction" in the title draw few students in general, this is corroborated by the actual enrollment numbers of this course.)

**Impacts on students:** There is no impact on students other than an improved understanding of what they can expect from the course as it is currently taught.

**Resource Needs:**

Please summarize basic resources needed to deliver this course, including the following:

- All faculty of Mathematical Sciences are qualified to teach the course.
- A standard classroom seating 30 people in Stratton Hall
- Laboratory: N/A
- Library resources: N/A
- Information Technology: N/A

**Implementation Date:** AY 2017/18, B-term. Course will be taught every year in B-term.

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Subject:** Motion to modify MA 2431 Mathematical Modeling with Ordinary Differential Equations

**Motion:** On behalf of the Department of Mathematical Sciences, the Committee on Academic Operation recommends and I move that the description for MA 2431 Mathematical Modeling with Ordinary Differential Equations be changed, as described below.

**Description of Proposed Changes:**

**Current course description:**

**MA 2431 MATHEMATICAL MODELING WITH ORDINARY DIFFERENTIAL EQUATIONS (Cat. I)**

This course focuses on the theoretical foundations of ordinary equations while building models for physical and biological systems. Mathematical topics may include methods for solving systems of ordinary differential equations, existence and uniqueness theory, stability theory, phase-plane analysis and limit cycles. Examples will be chosen from electrical and mechanical oscillations, control theory, ecological models and reaction kinetics. Students will learn how to turn a real-life physical or biological problem into a mathematical one and to interpret the mathematical results. This course is designed primarily for Mathematical Sciences majors and those interested in the deeper mathematical issues underlying mathematical modeling. Undergraduate credit may not be earned both for this course and for MA 3431. Recommended background: MA 1024, MA 2051 and MA 2071. This course will be offered in 2015-16, and in alternating years thereafter.

**Proposed course description:**

**MA 2431 MATHEMATICAL MODELING WITH ORDINARY DIFFERENTIAL EQUATIONS (Cat. I)**

This course focuses on the principles of building mathematical models from a-physical, chemical or biological system and interpreting the results. Students will learn how to construct a mathematical model and will be able to interpret solutions of this model in terms of the context of the application. Mathematical topics focus on solving systems of ordinary differential equations, and may include the use of stability-theory and phase-plane analysis. Applications will be chosen from electrical and mechanical oscillations, control theory, ecological or epidemiological models and reaction kinetics. This course is designed primarily for students interested in the deeper mathematical issues underlying mathematical modeling. Students may be required to use programming languages such as Matlab or Maple to further investigate different models. Recommended background: multivariable calculus (MA 1024 or equivalent), ordinary differential equations (MA 2051 or equivalent), and linear algebra (MA 2071 or equivalent).

**Rationale:**

The course description was in need of updating.

It is necessary to update the course description to reflect the current course content. Additionally, it is necessary to clarify how this course focuses on model development and how this is different from that of MA 3471. The course is Cat I, so we are removing the sentence regarding course

offerings in alternating years. In addition, we have removed the reference to MA 3431, which is a course that has not been offered for quite some time.

**Impacts on students:** There is no impact on students other than an improved understanding of what they can expect from the course as it is currently taught.

**Resource Needs:** No additional resources will be required based upon this motion.

**Implementation Date:** 2017-2018 Academic year

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Subject:** Motion to modify MA 3231 Linear Programming

**Motion:** On behalf of the Department of Mathematical Sciences, the Committee on Academic Operation recommends and I move that the description for MA 3231 Linear Programming be changed as described below.

**Description of Proposed Changes:**

**Current course description:**

MA 3231. LINEAR PROGRAMMING (Cat. I)

This course considers the formulation of real-world optimization problems as linear programs, the most important algorithms for their solution, and techniques for their analysis. Topics covered include: the primal and dual simplex algorithms, duality theory, parametric analysis, network flow models and, as time permits, bounded variable linear programs or interior methods. Recommended background: MA 2071.

**Proposed course description:**

MA 3231. LINEAR PROGRAMMING (Cat. I)

The mathematical subject of linear programming deals with those problems in optimal resource allocation which can be modeled by a linear profit (or cost) function together with feasibility constraints expressible as linear inequalities. Such problems arise regularly in many industries, ranging from manufacturing to transportation, from the design of livestock diets to the construction of investment portfolios.

This course considers the formulation of such real-world optimization problems as linear programming problems, the most important algorithms for their solution, and techniques for their analysis. The core material includes problem formulation, the primal and dual simplex algorithms, and duality theory. Further topics may include: sensitivity analysis; applications such as matrix games or network flow models; bounded variable linear programs; interior point methods. Recommended background: Matrices and Linear Algebra (MA 2071, or equivalent).

**Rationale:**

The motion provides a more detailed explanation of the course content. It also states more explicitly which topics are in the core of the course and which are possible additional topics up to the discretion of the instructor, allowing better to align the course with the instructor's vision.

The motion is a result of a routine review of existing course descriptions in Mathematical Sciences.

**Impacts on students:** There is no impact on students other than an improved understanding of what they can expect from the course as it is currently taught.

**Resource Needs:**

Please summarize basic resources needed to deliver this course, including the following:

- Recent instructors include M. Blais, W. Martin and S. Weekes. All faculty of Mathematical Sciences are qualified to teach the course
- A standard classroom seating 40 people in Stratton Hall

- Laboratory: N/A
- Library resources: N/A
- Information Technology: N/A

**Implementation Date:** AY 2017/18, A-term. Course will be taught every year in A-term.

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Subject:** Motion to modify MA 3233 Discrete Optimization

**Motion:** On behalf of the Department of Mathematical Sciences, the Committee on Academic Operation recommends and I move that the description for MA 3233 Discrete Optimization be changed as described below.

### **Description of Proposed Changes:**

#### **Current course description:**

MA 3233. DISCRETE OPTIMIZATION (Cat II)

Discrete optimization is a lively field of applied mathematics in which techniques from combinatorics, linear programming, and the theory of algorithms are used to solve optimization problems over discrete structures, such as networks or graphs. The course will emphasize algorithmic solutions to general problems, their complexity, and their application to real-world problems drawn from such areas as VLSI design, telecommunications, airline crew scheduling, and product distribution. Topics will be selected from: Network flow, optimal matching, integrality of polyhedra, matroids, and NP-completeness. Undergraduate credit may not be earned both for this course and for MA 4233. Recommended background: At least one of MA 2271, MA 2273 or MA 3231. This course will be offered in 2016-17, and in alternating years thereafter.

#### **Proposed course description: (with deletions ~~struck through~~ and additions underlined)**

MA 3233. DISCRETE OPTIMIZATION (Cat II)

Discrete optimization is a lively field of applied mathematics in which techniques from combinatorics, linear programming, and the theory of algorithms are used to solve optimization problems over discrete structures, such as networks or graphs. The course will emphasize algorithmic solutions to general problems, their complexity, and their application to real-world problems drawn from such areas as VLSI design, telecommunications, airline crew scheduling, and product distribution. Topics will be selected from: Network flow, optimal matching, integrality of polyhedra, matroids, and NP-completeness.

~~Undergraduate credit may not be earned both for this course and for MA 4233.~~

Recommended background: At least one course in graph theory, combinatorics or optimization (e.g., MA 2271, MA 2273 or MA 3231).

This course will be offered in 2018-19, and in alternating years.

#### **Rationale:**

A sentence that no credit can be given for this and MA 4233 has been removed, as MA 4233 has not been offered for more than 15 year and is no longer part of the catalog.

The motion is a result of a routine review of existing course descriptions in Mathematical Sciences.

**Impacts on students:** There is no impact on students other than an improved understanding of what they can expect from the course as it is currently taught.

**Resource Needs:**

Please summarize basic resources needed to deliver this course, including the following:

- Recent instructors include W. Martin and B. Servatius. All faculty of Mathematical Sciences are qualified to teach the course
- A standard classroom seating 40 people in Stratton Hall
- Laboratory: N/A
- Library resources: N/A
- Information Technology: N/A

**Implementation Date:** AY 2018/19, B-term. Course will be taught every year in B-term.

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Subject:** Motion to add ME 4424 Radiation Heat Transfer Application and Design

**Motion:** On behalf of the Department of Mechanical Engineering, the Committee on Academic Operation recommends and I move that ME 4424 Radiation Heat Transfer Application and Design, as described below, be added.

**Proposed Course Description:**

**ME 4424 Radiation Heat Transfer Application and Design (Cat. II)**

Radiation Heat Transfer Applications will develop the student's knowledge of radiation and multi-mode heat transfer. Fundamentals of radiation will be covered: radiative properties of surfaces; view factors; exchange between black and grey surfaces; emission and absorption of gases; and flame radiation. Use of numerical methods will be emphasized as appropriate for solution of applications: the select numerical methods (numerical integration, matrix methods, ODE solutions) can be learned during the course. The course will conclude with a design exercise to be completed by each student. Each exercise will highlight radiation in a realistic scenario that requires multi-mode heat transfer and fluid mechanics analysis to develop the design solution. Exercise topics will come from subjects such as: solar power plants, solar effects on buildings, furnaces, fire safety in the built environment, etc.

Recommended background: differential and integral calculus, and ordinary differential equations (MA 2051 or equivalent), and thermodynamics, fluid mechanics and heat transfer (ES 3001, 3004, 3003 or equivalents).

Students may not receive credit for both ME 4424 and ME 442X.

**Anticipated Instructor:** Prof Nicholas Dembsey, FPE. Other ME/FPE faculty could teach this, but that is not currently planned.

**Rationale:**

The purposes of this course are to develop the student's knowledge of radiation and multi-mode heat transfer via application and design. The outcomes for the students will be to develop the skills needed to solve "real world" problems that involve synthesis of various thermal fluids fundamentals, and analytical and numerical methods into an analysis framework that then can be used for design optimization.

**Enrollment projections:** Initially 10-20 students which could expand to 20-40 students over time.

**Summary of feedback received when offered as an experimental course (A-15, A-16):**

1. *Student feedback:* Based on informal conversations with students throughout the two classes: they had an interest in improving their radiation heat transfer background and were able to do this via homework and the design project.
2. *Feedback from course evaluations:* Comparison of the two offerings of the course is difficult in specific as the students had very different backgrounds from the first offering to the second offering. In the first offering the majority of the students were graduate level. These students had either limited undergraduate radiation background or were looking for a refresher on radiation heat transfer. In the second offering the majority of students were undergraduate level. These students wanted to improve their radiation background but did not in general have the same maturity and independence level as the graduate students from the first offering. Based on the feedback from the first offering, corrections were made as noted. In general due to their limited exposure to radiation in previous courses, the students (undergraduate and graduate) found value in the review of radiation heat transfer

as well as the new material covered in the homework. The amount of material covered in three plus weeks was challenging (especially for undergraduate students). The homework was reasonable preparation for the design project. Some students (graduate) liked working on their own design projects as was undertaken for both classes. Other students (undergraduate) would have preferred one project. The use of class time during the three plus weeks of the project was not always considered effective as students (undergraduate and graduate) did not readily see how discussion of another student's different project also related to their own project in terms of general and specific approaches to design. Most students seemed to be pleased that the course allowed them to improve their radiation and heat transfer knowledge.

3. *Outcomes from questions 1, 2, 9, and 26 of course evaluations:* Average scores for the two classes: #1=3.8; #2=3.9; #9=3.6; #26: Attend = 4 hr/wk and Outside = 11-15 hr/wk
4. *Instructor feedback and reflections (e.g., did the course meet the learning objectives or outcomes):* I believe the course was successful in terms of improving students' radiation and multi-mode heat transfer knowledge. The first half of the course focuses on radiation material (review and new) as well as some basic numerical methods. This material sets the stage for the "real world" problem considered in the design project during the second half of the course. The material gives the students a good basis for developing the needed analysis framework used for design optimization. It has been a bit challenging pacing the homework assigned during the first half of the course. Another challenge has been helping the students to develop their analysis framework for design as they are not greatly experienced in synthesizing the framework. To address these issues I have significantly changed the course from the first to the second offering. Additionally, I have many ideas to refine the course for the third offering to address these issues, such as: creating bridge assignments focusing on synthesis that would allow the students to transition more seamlessly from the homework to the design project; consider using one design project topic to then allow for a more of a "flipped class" approach to working on the project in class; create multiple student teams to work on one to three design project topics; for multiple design topics create a in-class formal review of other teams projects, etc. I think the course is valuable to teach the students more about radiation heat transfer, and analysis and optimization (design).
5. *Include population numbers:* A2015 = 6; A2016 = 8.

**Implementation:** Implementation date for this action is the 2017-2018 Academic year. Students may not receive credit for both ME 4424 and ME 442X.

**Resource Needs:**

1. The Department of Fire Protection Engineering has confirmed with the Department of Mechanical Engineering that Professor Nicholas Dembsey is available to teach the course.
2. The classroom for the course will need to be able to accommodate 20 students. It would be best to have lecture-capture as well as computer and projector capabilities.
3. No laboratory is needed
4. Only typical library resources are needed.
5. Information Technology support from the Academic Technology Center will be needed for the classroom.

**Impact on Distribution Requirements and Other Courses:** ME 4424 will become an additional senior elective course for students to choose. It should be added to both "3 required" and "Select 3" under the Thermal-Fluid engineering concentration. It should also be added to item 3 of the Minor in Mechanical Engineering.

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Graduate Studies and Research (Prof. Troy, Chair)  
**Subject:** Motion to modify policies related to the add-drop policy for Graduate Students

**Motion:** On behalf of Committee on Graduate Studies and Research, I move that the add/drop policy for semester-based courses be modified as described below.

**Description of Proposed revisions:** (additions underlined and deletions ~~struck through~~)

Graduate Catalog text (pg. 20):

For 14-week courses (undergraduate and graduate), students can make course changes (add or drop) without penalty through the tenth day of the semester ~~prior to the third meeting of the course~~. A \$100 late fee will be charged for course ~~changes made~~ adds after the tenth day of the semester and instructor permission is required ~~the third course meeting and before the fourth~~. For undergraduate students, ~~no add or~~ No drops are allowed after the tenth day of the semester ~~the fourth course meeting~~. For graduate students, ~~in a 14-week course who drop the course after~~ course withdrawals are permitted until the tenth week of the semester, and the fourth meeting and before the tenth week of the term, a grade of W (Withdrawal) will be assigned. No tuition or fees will be refunded after the tenth day of the semester. Consult the University calendar for specific dates. ~~the fourth meeting of the course. Students who wish to add a course after the add/drop deadline must submit a petition to the Committee on Academic Operations for undergraduate courses and the Committee on Graduate Studies and Research for graduate courses. In all such cases, instructor approval will be required.~~

For 10-week courses, and to view WPI's refund policy, see <http://www.wpi.edu/offices/acc/refund.html>.

Note: If a degree-seeking student is dropping or withdrawing from all registered course activity, they must either take a leave of absence or officially withdraw from the University.

**Clean version of the Proposed revisions:**

For 14-week courses (undergraduate and graduate), students can make course changes (add or drop) without penalty through the tenth day of the semester. A \$100 late fee will be charged for course adds after the tenth day of the semester and instructor permission is required. No drops are allowed after the tenth day of the semester; for graduate students, course withdrawals are permitted until the tenth week of the semester, and a grade of W (Withdrawal) will be assigned. No tuition or fees will be refunded after the tenth day of the semester. Consult the University calendar for specific dates.

10-week courses (undergraduate and graduate) follow the same add/drop schedule as 14-week courses.

Note: If a degree-seeking student is dropping or withdrawing from all registered course activity, they must either take a leave of absence or officially withdraw from the University.

**Rationale:**

The current add/drop policy is ambiguous and not consistent with the undergraduate 7-week course policy. The revised proposal specifies that changes can be made without penalty through the tenth day of the semester, after which there are financial and grade implications. This mirrors the 7-week course add/drop policy, which specifies that changes can be made through the 5<sup>th</sup> day of the term.

**Impact on Degree Requirements:** This motion will not impact degree requirements.

**Resources and Anticipated Instructors:** No new resources needed

**Implementation Date:** Implementation date for this action is the 2017-2018 academic year.

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Graduate Studies and Research (Prof. Troy, Chair)  
**Subject:** Motion to add BME 583 Biomedical Microscopy and Quantitative Imaging

**Motion:** On behalf of the Department of Biomedical Engineering, the Committee on Graduate Studies and Research recommends and I move that BME 583 Biomedical Microscopy and Quantitative Imaging, as described below, be added.

**Proposed Course Description:**

***BME 583. Biomedical Microscopy and Quantitative Imaging (3 credits)***

This course introduces fundamental principles of biomedical imaging focused on quantitative microscopy. Topics include physical basis of light microscopy, fluorescence microscopy, live cell imaging and computer vision algorithms. Advanced topics include 3D imaging (confocal, light sheet, 2-photon), super-resolution, sample preparation, and equipment considerations. Selected topics in medical imaging (CT, MRI, ultrasound) may be included, with hands-on instruction on commercial and student-built systems.

*NOTE: Students who received credit for BME 581 in Spring 2016 may not also receive credit for BME 583.*

**Anticipated Instructors:** Albrecht, Dirk ; Lee, Kwonmoo

**Rationale:**

This course fills a gap in the BME curriculum in the topic of quantitative biomedical imaging, focused in depth on light microscopy while including a few other medical imaging modalities. The course includes hands-on labs to teach practical techniques including building a microscope from optical components, use of various commercial microscopy equipment, imaging processing, and data visualization.

This elective course is planned to be offered every other year to 12-15 students per offering.

This course was offered once previously Sp'16 as BME581: Medical Imaging Systems. It will be offered again in Sp'18. For a first offering, the course was well received (see below). Students particularly liked the hands-on labs and image processing exercises. One student wrote and presented a conference paper based on his work in the class ("From pixel to voxel in the clinical diagnosis" *IEEEExplore CONCAPAN 2016*). Criticisms were primarily on course organization, particularly to integrate theory and labs more closely, or the overly-broad, hybrid focus on both microscopy and medical imaging. These are easily addressable, including reorganizing the course and focusing the material on microscopy. Most students highly recommended the course.

The purpose of the motion is to add the course to the catalog with a permanent course number.

**Data from previous course offerings:**

***Spring 2016:***

Enrollment: 13

Reviews (reported for each of 2 instructors):  
Q1: 3.64, 3.64  
Q2: 4.09, 3.80  
Q9: 3.82, 3.90

**Impact on Degree Requirements:** None. This course provides an additional option for graduate students to fulfill their BME degree requirements.

**Resources and Anticipated Instructors:** No new resources required. The course will be co-taught by Dirk Albrecht and Kwonmoo Lee as part of their expected teaching load. Professors Albrecht and Lee developed and delivered the 2016 offering of this course. Laboratory exercises were conducted in the classroom, in common-use shared microscopy rooms in Gateway, or on the students' own personal computers for image processing exercises.

**Implementation Date:** AY 2017-18

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Graduate Studies and Research (Prof. Troy, Chair)  
**Subject:** Motion to add BME 594 Biomedical Engineering Journal Club

**Motion:** On behalf of the Department of Biomedical Engineering, the Committee on Graduate Studies and Research recommends and I move that BME 594 Biomedical Engineering Journal Club, as described below, be added.

**Proposed Course Description:**

***BME 594. Biomedical Engineering Journal Club (1 credit)***

This course will cover different topics in biomedical engineering research, both basic and translational. Enrolled students read and discuss the literature in relevant topics, which may include biomaterials, drug delivery, tissue engineering, cardiovascular engineering, mechanobiology, quantitative imaging, instrumentation, computational biomechanics, injury and rehabilitative biomechanics, or any focused topic related to biomedical engineering. The objectives of the course are for students to learn about current topics within a focused area of biomedical engineering, to improve their ability to critically review literature, and develop their technical presentation skills. Multiple sections of biomedical engineering journal club focused on different research topics may be offered each semester. (Pre-requisite: Master's or Ph.D. student in biomedical engineering or a related discipline).

Biomedical engineering graduate students may take up to 3 credits of BME 594 to satisfy Biomedical Engineering or Elective course credit to meet graduate program distribution requirements.

*NOTE: This course cannot be used to satisfy Biomedical Engineering or Engineering elective credit to meet undergraduate program distribution requirements.*

**Rationale:**

Most graduate students need to learn the skills required to critically review the primary research literature and present their thoughts and ideas in a cohesive manner. This course will give the students practice and feedback while learning about current interdisciplinary topics in biomedical engineering. Students will read recent journal articles, prepare presentations and give short talks, engage in critical discussion and provide feedback to fellow students.

**Outcomes Assessment:**

Learning outcomes include:

1. Students will be able to critically evaluate current journal articles in Biomedical Engineering
2. Students will be able to orally summarize current biomedical engineering research based on the literature.

These outcomes will be assessed at the discretion of the faculty member of record.

**Impact on Distribution Requirements and Other Courses:** None; counts as BME course credit to meet graduate program degree requirements.

**Resources and Anticipated Instructors:** No new resources required. Instructors will teach the course as part of their expected departmental teaching load. The class would meet in a Gateway Park conference room, which will be equipped with overhead projectors. Responsibility for course organization will rotate among course instructors.

**Implementation Date:** AY 2017-18

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Graduate Studies and Research (Prof. Troy, Chair)  
**Subject:** Motion to add catalog descriptions for BME graduate research courses

**Motion:** On behalf of the Department of Biomedical Engineering, the Committee on Graduate Studies and Research recommends and I move that BME 598 Directed Research, BME 599 Master's Thesis, and BME 699 Ph.D. Dissertation, as described below, be added.

**Descriptions of Proposed Courses:**

**BME 598. Directed Research**

Students may register for Directed Research to fulfill graduate research rotation (e.g. Master's students seeking a thesis lab) or independent, mentored graduate research and projects. BME graduate students may apply up to 3 credits of BME 598 as BME course credit and an additional 3 credits of BME 598 credit to fulfill elective, laboratory rotation, or independent project credit. BME 598 credit used for laboratory rotations may be converted to BME 599 or BME 699 credit for qualified graduate students who remain in the rotation laboratory for their thesis or dissertation research. (Pre-requisite: Master's or Ph.D. student in biomedical engineering).

**BME 599. Master's Thesis**

Graduate students enrolled in the thesis-based (Master of Science, M.S.) program must complete 6 credits total and successfully defend and submit a Master's thesis by the posted deadlines. (Pre-requisite: Master's thesis student in biomedical engineering).

**BME 699. Ph.D. Dissertation**

All Ph.D. students must complete 30 credits of dissertation research to fulfill Ph.D. degree requirements. (Pre-requisite: Student has passed the Biomedical Engineering Ph.D. Qualifying Examination).

**Rationale:**

Adding course descriptions will provide additional guidance to students with respect to planning course selection and registration to fulfill their BME graduate degree requirements.

**Impact on Degree Requirements:** None.

**Resources and Anticipated Instructors:** No new resources required.

**Implementation Date:** AY 2017-18

**Appendix B: Motions to Approve the May 2017 Graduation Lists**

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Academic Operations (Prof. Iannacchione, Chair)  
**Re:** Motion to approve the May 2017 undergraduate student graduation list

**Motion:** The Office of the Registrar reports that the following candidates have either completed all the requirements for the degree designated in the department or program indicated, or are expected to complete their degree requirements before May 13, 2017. They therefore are or will be eligible to receive that degree, and on behalf of the Committee on Academic Operations, I move that – pending final verification by the Registrar that all those on the list have in fact completed their degree requirements - they be approved for May 13, 2017 graduation.

### **Bachelor of Science**

#### **Actuarial Mathematics:**

Gabrielle Marie Amarosa  
Minor: Writing and Rhetoric  
Elizabeth Daley Beazley  
Katherine Ann Curran  
Ian Andrew DeLisle  
Anton Ifeyimika Libsch  
Minor: Business  
Meghana Prakash  
Minor: Business  
Alberto Romo Herrera Ibarrola  
Minor: Business  
Robert David Ronacher  
Minor: Data Science  
Minor: Business

#### **Aerospace Engineering:**

Bryan John Adie  
Alex Joseph Brown  
Samantha Clay Chernin  
Kieran Lawrence Cochran  
Emily Ann Curci  
Miguel Goulart de Almeida  
Minor: Computer Science  
Michael Salvatore DiMilia  
Minor: Computer Science  
Jamie Marie Donahue  
Minor: Electrical and Computer  
Engineering  
Zachary Ryan Edelman  
Eric Daniel Fast  
Michael Anthony Gagliano  
Minor: Drama/Theatre  
Nicholas Green

Jonathan Charles Griffin  
Minor: Electrical and Computer  
Engineering  
Stephen Michael Harnais  
Austin Joshua Higgins  
Thomas John Hlavenka  
Alexander Gabriel Korza  
Minor: Materials  
Steven Charles Laudage  
Victor Levorse  
Yutong Li  
Christopher Robert Mastrangelo  
Peter Donald Melander  
*Double Major*  
Anushrot Mohanty  
Matthew Francis Murphy  
Edson Novinyo  
Minor: Electrical and Computer  
Engineering  
James Kevin O'Hara, Jr.  
Daniel James Pelgrift  
Mladen Pepic  
Derek James Porter  
Andrew Mark Rathbun  
Minor: Electrical and Computer  
Engineering  
Keith Parrott Rockwood  
Weston Tyler Schlack  
Samuel Sierra  
Kelley Marie Slabinski  
Minor: Astrophysics  
Brendan Andrew Sullivan  
Aaron Vien  
Ryan Michael Wiesenberg  
*Double Major*  
Zachary Raymond Wingerter  
Samuel Adam Young

**Applied Physics:**

Stephen Olis

**Architectural Engineering:**

Naumilda Como

Ysabel Espinal

Minor: Electrical and Computer  
Engineering

Meghan Claire Hickey

Yijie Lu

Minor: Mathematics

Kimberly E. Marrion

Ismael George Richard Nowick

Dylan Joseph Roche

Bruno Barros Scherrer

Leanne Marie Sickles

Cassandra Lynn Tomerlin

Marc Charles Toomajian

**Biochemistry:**

Andrew Steven Baez Rivera

Andrew Robert Baker

*Double Major*

Kyle Alfred Bessette

Paul deNyse Burrowes V

Allison Marie Butt

*Double Major*

Christine Elizabeth Carbone

Minor: Biology

Victor Chau

Kimberly Marie Coddling

*Double Major*

Abigail Carissa Cornwell

Minor: English

Whitney Janae Davis

Minor: Spanish

Alexandra Marie D'Ordine

*Double Major*

Niamh Alice Fennessy

Minor: Spanish

Alexander JianSheng Hu

Parsant Jotikasthira

Wasih Kamran

Miranda Paige Lawell

Minor: Global Public Health

Kyle Stuart Morrison

Bernat Navarro Serer

*Double Major*

Vanesa Pinderi

Minor: Bioinformatics and Computational  
Biology

Androniqi Qifti

Minor: Bioinformatics and Computational  
Biology

Victoria Semple

Minor: Biology

April Louise Solon

*Double Major*

Hannah Thompson

Minor: Global Public Health

Minor: Psychology

**Bioinformatics and Computational****Biology:**

Rachel Elizabeth Brown

*Double Major*

Max Fine Levine

Kerrin Spinney

**Biology and Biotechnology:**

Daniele Anina

Minor: Psychology

Andrew Robert Baker

*Double Major*

Samantha Rose Bircsak

Eric S. Borges

Rachel Elizabeth Brown

*Double Major*

Aidan Hugh Southerden Burn

Rebecca Leigh Burns

*Double Major*

Allison Marie Butt

*Double Major*

Alessandra Chiamonte

Minor: Chemistry

Eva Peng Childers

Minor: Chinese Studies

Cecelia Cotter

Edward William Dring

Minor: Spanish

Sebastian Ciro Espinosa

Frederick Wolfgang Gergits

Minor: Bioinformatics and Computational  
Biology

Rebecca Mary German

Minor: Biochemistry

**Biology and Biotechnology cont.:**

Matthew Ross Googins  
Minor: Biochemistry  
Alena Marie Grilla  
Lindsay Meg Gurska  
Colin Hunter Harrington  
Whitney Jeanne Hazard  
Rachael Denielle Heard  
Julia Louise Holtzman  
Arba Karcini  
Minor: Bioinformatics and Computational  
Biology  
Minor: Writing and Rhetoric  
Gregory A. Kasper  
Zahra Salem Halema Khazal  
Chloe Lynn LaJeunesse  
Jeffrey Raymond Letourneau  
Minor: Spanish  
Minor: Bioinformatics and Computational  
Biology  
Reed Alex Maxim  
Christine R. McCarron  
Mackenzi Rae McHugh  
Shelby Megan McQueston  
Bernat Navarro Serer  
*Double Major*  
Marissa Lauren Patterson  
Minor: Business  
Evelyn Jill Platko  
Charlotte Jewell Reames  
Minor: English  
Meredith Anne Rioux  
*Double Major*  
Rebecca Lyn Seymour  
April Louise Solon  
*Double Major*  
Catherine Elizabeth Souza  
Minor: International and Global Studies  
Emma-Jane Turton  
Anna Ingrid Wortman  
Jaden M. Yabut  
Minor: Psychology

**Biomedical Engineering:**

Amanda Kau Kanda Agdeppa  
Franklin David Alvarez  
Mushtaq Al Zuhairi  
*Double Major*

Norma Bachman  
*Double Major*  
Daniela Barbery  
Jack Alexander Blanchard  
Minor: Chemistry  
Mikayla Jane Bolduc  
Nicholas Joseph Brocato  
Minor: Chemistry  
Katie Elizabeth Brochu  
Minor: Electrical and Computer  
Engineering  
Alexandra Mary Burr  
Emily Anne Caron  
Minor: Biology  
Scott Lambert Cazier  
Minor: Robotics Engineering  
Minor: Global Public Health  
Tori Hallisy Claverie  
Rachel Marie Connolly  
*Double Major*  
Benjamin James Cossette  
Cameron Thomas Wang Currie  
*Double Major*  
Alexandra Ivone Czamara  
Nicholas James Dalton  
Brian Richard D'Amore  
Peyton Lian Delgorio  
*Double Major*  
Benjamin Hatcher Duncan  
Sean Brian Fallon  
Joseph Christopher Fancher  
*Double Major*  
Janine Fatal  
Emily Pearl Ferreira  
Cobi Evan Lucas Finkelstein  
Minor: Computer Science  
Thomas M. Flannery  
Taylor Frances Flaxington  
Kristin Stefani Gallagher  
Minor: Business  
Rhiannon Siobhan Goddard  
Jennifer Leigh Golden  
Annabella Perolino Goncalves  
Benjamin S. Grondin  
Sydney Maria Gustafson  
Ahmed Fawad Hakim  
Lubna Ali Hassan  
Benjamin Ernst Hassett

**Biomedical Engineering cont.:**

Michelle Kathleen Henderson  
Minor: Biology  
Charles Anthony Hill  
Marianne Kanellias  
Elie Karam  
Jocelyn Beverly Kurtze  
Erin Elizabeth LaBounty  
Minor: Electrical and Computer  
Engineering  
Melanie Lasso  
Minor: Mechanical Engineering  
James Lin  
Taryn Elizabeth Loomis  
Minor: Biology  
Jacob Roy Maalouf  
Alexander K. Marry  
Sienna Jo Mayer  
*Double Major*  
Erin Marie McConnaghy  
Zachary Alan McKinzie  
Minor: Biology  
Minor: Chemistry  
Anne Gabrielle McLoughlin  
Kyra Dylan McNamara  
Nicholas David McNary  
Minor: Electrical and Computer  
Engineering  
Gabriela Meza  
Minor: Mechanical Engineering  
Gregory Molica  
Minor: Materials  
Kyla Nicole Nichols  
*Double Major*  
Alexander R. Noonan  
Oluwajomiloju Ayobami Olaode  
Minor: Chinese Studies  
Rachel Misao Ooyama-Searls  
Minor: Biology  
Minor: Materials  
Samantha Suzanne Orosz  
Brittney Marie Pachucki  
Allison Elizabeth Paquin  
*Double Major*  
Benjamin James John Parent  
Minor: Biology  
Minor: Materials

Brianna Jean Parent  
Minor: Electrical and Computer  
Engineering  
Tristan Oliver Petit  
Nhi Van Phan  
Andrew Charles Pic  
Minor: Materials  
William Clark Pope  
Minor: Computer Science  
Benjamin D. Pulver  
Nicole Franciose Quintal  
Minor: Materials  
Dylan Renshaw  
*Double Major*  
Emily Richardson  
Minor: Materials  
Minor: Electrical and Computer  
Engineering  
Kate M. Rielly  
Briana Rodriguez  
Sarah Barnes Rogers  
Conrad Ruiz  
Minor: Business  
Stephany Ruiz  
Nathan Frederick Rumpf  
Lindsay Pearl Schneider  
Julia Michelle Smith  
Minor: Mechanical Engineering  
Nathan Aaron Stomberg  
Heather Stratica  
Connor James Tower  
Minor: Mechanical Engineering  
Thai Thanh Trinh  
*Double Major*  
Elizabeth Margaretha van Zyl  
Emily Jane Viloudaki  
Tiffany Tran Vo  
Minor: Electrical and Computer  
Engineering  
Minor: Bioinformatics and Computational  
Biology  
Elizabeth C. Walfield  
Minor: Materials  
Mina Essam William

**Biotechnology:**

Tara McHugh Simpson

**Business:**

Jacqueline Nancy Ngo  
*Double Major*  
Carolina Elizabeth Ramos  
*Double Major*  
Ashley Linda Stanley  
Minor: Economics

**Chemical Engineering:**

Abhinav Adhikari  
Audrey Joan Allen  
Concentration in Environmental  
Minor: Materials  
Alicia Kimberly Aquino  
Minor: Nanoscience  
Brian Joseph Bach  
Connor Barrett  
Daniel Charles Bloemker  
Minor: Business  
Garrett Matthew Brogan  
Minor: Computer Science  
Cynthia Bukowski  
Minor: Materials  
Zachary Thomas Burgess  
Julia K. Bushell  
Anthony Charles Campagna, Jr.  
Marguerite Marie Carey  
Minor: Materials  
Nathan Martin Caso  
Minor: Music  
Lucas Walter Chico  
Minor: Business  
Shanel Martina Chisholm  
Minor: Business  
Elena Rose Conroy  
Shannon DaCosta  
Annemarie Nicole Daddis  
Ryenne Marie Dailey  
Minor: Business  
Philip Jared Danaher  
Minor: Materials  
Sean Robert Deans  
Tyler Nicholas DeFosse  
Minor: Materials  
Ryan Patrick Dennis  
Minor: Chemistry  
Sebastien William Deveau  
Cameron Kevin DiSpirito  
Minor: Entrepreneurship

Martin Joseph Fitzgerald VI  
*Double Major*  
Minor: Materials  
Maxwell Julian Foster  
Minor: Materials  
Sierra Fowler  
Minor: Materials  
Weiran Gao  
Alexander John Gikas  
Luke Francis Habib  
Concentration in Energy  
Minor: International Studies  
Thomas Stephen Hanna  
Minor: Materials  
Mariana Harley Cabada  
Shannon Cait Healey  
Minor: Drama/Theatre  
Benjamin Heney  
Concentration in Materials  
Joseph O. Heng  
John Thomas Hobson  
Luke Alexander Jackson  
Gayatri Kasi  
Minor: Bioinformatics and Computational  
Biology  
Minor: Spanish  
Anthony Kassas  
Minor: Law and Technology  
Yoon Kyong Lee  
Michael Alexander Levy  
Ryan Lima  
Debora Brandt Lopes  
Jessica Jose Lord  
Allison Lynn Marx  
Minor: Materials  
Jena Morgan Mazzucco  
Caroline Mary Medino  
Matthew Michaels  
Matthew J. Morais  
Daniel Jonah Mortimer  
Jack Jay-Normand Murphy  
Sarah Muse  
Abbegail Hawkins Nack  
*Double Major*  
Concentration in Environmental  
Jacquelyn Nassar  
Minor: Materials  
Minor: Business  
Clyde-Blaise Niba

**Chemical Engineering cont.:**

Logan Kent Dragonetti Nichols  
Minor: Materials  
Tess Elisabeth Nogueira  
Concentration in Environmental  
Jenna Adrienne O'Connell  
Minor: History  
Omar G. Olortegui  
Nicole Marie Packard  
Minor: Materials  
Matthew Shaun Portugal  
Minor: Business  
Minor: Entrepreneurship  
Brian Edward Praetorius  
Anya Katerina Prevallet-Kinstle  
Jennifer Quigley  
Shaelyn Marie Quinn  
Kelly Rapoza  
Minor: Materials  
Lynn Rebecca Renner  
Susan Marie Ross  
Alexandra Marie Rozen  
Hope Dakille Shevchuk  
Benjamin Harrison Small  
Minor: Biochemistry  
Arianna Luz Smith  
Minor: Materials  
Minor: Business  
Brian Joseph Splaine  
Eric Christopher Stolz  
Minor: Business  
Ellen Thomson  
John Hutcheon Tofuri  
Minor: Spanish  
Shawn Devin Wile  
Minor: Music  
Christopher John Xavier  
Minor: Business  
Huilin Yang  
Edan Mandy Zhang  
Zhehao Zhu  
*Double Major*

**Chemistry:**

Everett Vincent Pope Baker  
Minor: Materials  
Jessica Rose Falci  
Concentration in Medicinal Chemistry  
Sarah K. Fields

Paige A. Lamica  
Stephanie Michelle Puckett  
Minor: Biology  
Margaret Ann Russell  
Anna Leigh Schozer  
Shwe Thein  
Nicholas Venditto  
Zhehao Zhu  
*Double Major*

**Civil Engineering:**

Liliana Cristina Almonte  
Alexander Bosworth  
Caitlin Sara Burner  
Geneva Gomes Cabral  
Sarah Danielle Campos  
Ryan Cavanaugh  
Elizabeth Marie Coffey  
John Robert Connors  
Christian James Duskocil  
Minor: Business  
Miguel Escuer  
Patrick Christopher Gates  
Emma Teresa Healey  
Matthew Houghton  
Concentration in Environmental  
Brendan Michael Johnson  
Brendan Kling  
Concentration in Environmental  
Jackson Krupnick  
Anjali Kuchibhatla  
Carolina Elisa Leguizamon Baez  
Tyler James Leighton  
Kenuel Lopez Rivera  
Seth Michael MacDonald  
Dylan Stephen Martel  
Caroline Downing Meyer  
Jibreel Mustafa  
Sai Sett Paing  
Minor: Business  
Julia Helen Pershken  
Minor: Architectural Engineering  
Robyn Quartararo  
Emily Ann Raskett  
Brittany Kayla Rebello  
Julia Grace Ring  
Anna Isabelle Schab  
Maitane Sesma  
Ahsan Aadil Nizam Shaikh

**Civil Engineering cont.:**

Emanuela Sherifi  
Victoria Lynn Simpson  
Serena Melissa Soltero  
Minor: International and Global Studies  
Daniel R. Stomski  
Ryan Joseph Sullivan  
Abbey Leigh Teliska  
Steven William Thulin  
Michael John Vaitkunas  
Minor: Business  
Kevin Andrew Van Wormer  
Sonia Andrea Zarate  
Christopher Joseph Zmuda

**Computer Science:**

Rayan A. Alsoby  
Minor: Robotics Engineering  
Joshua Daniel Audibert  
Minor: Interactive Media and Game  
Development  
Lauren Michelle Baker  
*Double Major*  
Matthew Beaulieu  
Daniel Jonathan Beckwith  
August Deford Beers  
*Double Major*  
Tyler Bennett  
Benjamin Gindi Bianchi  
Alexandra Leigh Bittle  
*Double Major*  
Joseph Charles Travis Blackman  
Minor: Mathematics  
Domenic Bozzuto  
*Double Major*  
Nicholas Schoneweg Bradford  
Minor: Robotics Engineering  
Logan Edward Brown  
Kurt Bugbee  
Banjamin I. Chaney  
Nicholas Stephen Chaput  
Justin Scott Charron  
Jeffrey John Chaves  
Yao Yuan Chow  
*Double Major*  
Ethan Arthur Coeytaux  
Minor: Electrical and Computer  
Engineering  
Devon Coleman

Ezra Philip Darius Davis  
Minor: Electrical and Computer  
Engineering  
Minor: Interactive Media and Game  
Development  
Nicholas Anthony Diaz  
Zhaochen Ding  
Ziyan Ding  
*Double Major*  
Robyn Angela Domanico  
Arun Donti  
Minor: Business  
Minor: Data Science  
Arthur Joseph Dooner  
Minor: Electrical and Computer  
Engineering  
Jesse Earisman  
Minor: Mathematics  
Erin Paige Esco  
Katie Gandomi-Bernal  
*Double Major*  
Minor: Electrical and Computer  
Engineering  
Gordon Gao  
Minor: Business  
Elijah Lee Gonzalez  
Minor: Interactive Media and Game  
Development  
Kewen Gu  
Minor: Electrical and Computer  
Engineering  
Jacob Ryan Hackett  
*Double Major*  
Breanne Happell  
*Double Major*  
Minor: Electrical and Computer  
Engineering  
Michael Dillon Harney  
Minor: Writing and Rhetoric  
William August Hartman  
Tucker Caelan Ellis Haydon  
*Double Major*  
Minor: German  
Minor: Physics  
Gavin Arthur Hayes  
Fiona Heaney  
Joshua Hebert  
Walter Ho  
Yuheng Huo

**Computer Science cont.:**

Alexander Joseph Huot  
*Double Major*  
Theresa Kathryn Inzerillo  
Adilet Issayev  
Clark William Jacobsohn  
Ian Jacoway  
Minor: Mathematics  
Nathaniel Jefferson  
*Double Major*  
Cameron T. Jones  
Myles Brandon Karam  
*Double Major*  
Bryce Christian Kaw-uh  
*Double Major*  
Alexi Robert Kessler  
Ryan Baylor Killea  
Dean Joseph Kiourtsis  
Stephen Robert Lafortune  
Rupak Lamsal  
Patrick Robert Lebold  
Tiffany Leung  
Li Li  
Mengwen Li  
*Double Major*  
Jacob Steven Link  
Minor: Interactive Media and Game  
Development  
Arthur Jebediah Wilder Lockman  
*Double Major*  
Michael Joseph LoTurco  
Jesse Axelrod Marciano  
Minor: Interactive Media and Game  
Development  
Alonso Martinez  
*Double Major*  
Andrew McAfee  
Matthew McCarthy  
Jonas McGowan-Martin  
*Double Major*  
Derek Matthew McMaster  
Benjamin John McMorran  
Minor: Electrical and Computer  
Engineering  
Thomas James Meehan  
*Double Major*  
Ivan Melnikov  
*Double Major*  
Andrew Jack Mokotoff

Preston Izant Mueller  
Adam Edmonds Myers  
*Double Major*  
Yahel Nachum  
*Double Major*  
Erik Ilan Nadel  
Christopher Joseph Navarro  
John Perry Nelson  
*Double Major*  
Hoang Minh Ngo  
Matthew Nam Nguyen  
Tyler Jeffrey Nickerson  
Minor: Chinese Studies  
Aditya Nivarthi  
Seth Daniel Norton  
Minor: Robotics Engineering  
Jackson Edward Oliva  
Minor: Interactive Media and Game  
Development  
Paul Whitin Orvis V  
*Double Major*  
Nicholas Ackley Paganetti  
Alexandre Jean Pauwels  
*Double Major*  
Joseph William Perez  
Minor: Electrical and Computer  
Engineering  
Tim Alexander Petri  
Isamu George Press Nakagawa  
Andrew Laurence Ray  
*Double Major*  
Zachary Reid Sweet Robbins  
Minor: Business  
Austin T. Rose  
Brian Rubenstein  
*Double Major*  
Paula Lorraine Rudy  
Himanshu Sahay  
Jonathan Robert Sawin  
Daniel Peter Seaman  
Minor: Business  
Bailey Kyra Sheridan  
Minor: Interactive Media and Game  
Development  
Ian Renee Shusdock  
*Double Major*  
Jeff Allen Sirocki  
Minor: Entrepreneurship

**Computer Science cont.:**

Gareth Reid Solbeck  
*Double Major*  
Kevin Brian Specht  
*Double Major*  
Matthew James Suarez  
Andrew Raymond Tautkus  
William Miller Temple II  
Akshay Thejaswi  
Alexander David Titus  
Sai Kiran Vadlamudi  
Julie F. Valim  
William Alexander Van Rensselaer  
Maurizio Vitale Touris  
Jules Andal Voltaire  
Alexander William Wald  
Minor: Electrical and Computer  
Engineering  
Lambert Wang  
Minor: Interactive Media and Game  
Development  
Xuanzhe Wang  
Yiren Wang  
Minor: Electrical and Computer  
Engineering  
Yudi Wang  
Jacob Ross Watson  
Minor: Management Information Systems  
Minor: History  
Yuan Wen  
Minor: Electrical and Computer  
Engineering  
Hugh Whelan  
Minor: German  
Nicholas Sze-Yu Wong  
Minor: Interactive Media and Game  
Development  
Ziyao Xu  
Minor: Management Information Systems  
Kyle Young  
*Double Major*  
Nan Zhang  
*Double Major*  
Yihong Zhou  
*Double Major*  
Matthew Zielonko  
Minor: Mathematics  
Minor: Spanish

**Economic Science:**

Zachary Joseph Chapman  
Nicholaus David Jasinski  
*Double Major*  
Minor: Entrepreneurship  
Jacqueline Nancy Ngo  
*Double Major*

**Electrical and Computer Engineering:**

Johnathan Werber Adams  
Joseph Agresta  
Minor: International and Global Studies  
Qusai Ahmed Alhumoud  
Dylan Armand Baranik  
Minor: Computer Science  
Matthew Philip Barreiro  
Minor: Music  
Benjamin James Beauregard  
Minor: Computer Science  
Daniel Bettigole  
Elizabeth A. Bliss  
Stephen Philip Blouin  
William Boyd  
*Double Major*  
Devon Michael Bray  
Minor: English  
Minor: Computer Science  
Edward Burnham  
Jacqueline Paige Campbell  
Kyle James Cederberg  
Minor: Music  
Eric Cheng  
Minor: Computer Science  
Yejee Choi  
Nicholas Anthony Comei  
Christopher John Connor, Jr.  
Minor: History  
Rebecca Dall'Orso  
Gabriela de Peralta  
Erin Elizabeth Ferguson  
Calvin Leon Figuereo-Supraner  
Bernardino Garay IV  
Amanda Marie Gatz  
Georges Luc Gauthier  
David John Goodrich  
Minor: Computer Science  
Seth O. Gyebi  
Brian R. Hecker  
Minor: Computer Science

## Electrical and Computer Engineering

### cont.:

Anna Celeste Hernandez  
*Double Major*  
Minor: Music

Jonathan Ho Wu

Syed Ali Hussain

Michael Julian Inserra

Scott Wesley Iwanicki  
Minor: Computer Science

Georgios Karapanagos  
Minor: Computer Science

Andrew James Kelleher

Monineath Khun

Hyunsoo Kim  
Minor: Computer Science

Patrick Alphonse Lacroix

Joshua Simon Ledee

Max Hongming Li  
Minor: Computer Science

Mengwen Li  
*Double Major*

Yue Jerry Li  
Minor: Mathematics

Rosemary C. Lindsay  
*Double Major*

Klaudia Linek

Samuel Joseph List

Victoria Cristine Loehle  
*Double Major*

Patrick Luby Long  
Minor: Computer Science

Thinh Gia Ly  
Minor: Computer Science

Krishna Irivinti Jaya Mahalingam  
Minor: Music  
Minor: Interactive Media and Game  
Development

Sagar Mahurkar  
Minor: Computer Science

James Michael Maliff, Jr.

Eric Philip Meier

Javier Menchaca Gallegos  
Minor: Management Information Systems

Stephen Dominic Michelini

Jorgo Mihallari  
Minor: Biology

Nicole Mikolajczak

Carlos Antonio Monterrosa Diaz  
Minor: Computer Science

Daniella Morico

Glen Mould

Hung Quoc Ngo

Raymond Heally Otieno  
Minor: Aerospace Engineering

Erik Paulson

Liam Miller Perry  
Minor: Computer Science

Robert Michael Perry

Vishal Kumar Rathi  
Minor: Computer Science

Anthony Henry Ratte  
Minor: Computer Science

Savannah Nicolle Redetzke

Andrew William Reyburn

Maria Ines Rios Martinez

Corin Marshall Rypkema

Roger Andrew Agana Santos  
Minor: Social Entrepreneurship  
Minor: Computer Science

Raphael Sarkar

Bryan Jacob Sellers  
Minor: Business

Samuel Myer Shurberg

Oliver Simon  
Minor: Computer Science

Charles Sinkler  
*Double Major*

Yesugey Batu Sipka  
*Double Major*

Ioannis Skourtis

Steven Richard Souto  
Minor: Computer Science

Julia Jadwiga Szemiot  
Minor: Materials

Zilu Tian  
*Double Major*

Anh Le Tran

Thai Thanh Trinh  
*Double Major*

Andrew Vanner

Giselle Lucia Verbera  
Minor: Environmental and Sustainability  
Studies

Sean Alexander Watson

John Vincent Williams  
*Double Major*

## **Electrical and Computer Engineering**

### **cont.:**

Htay Aung Win

## **Environmental Engineering:**

Cara Jean Bereznai

Minor: Spanish

Elizabeth Lauren Desjardins

Minor: Business

Sierra Nicole Fraioli

Anna Christina Franciosa

Nikos Alexander Kalaitzidis

*Double Major*

Minor: Spanish

Jacqueline Anne Kendrick-Tedesco

Amy Seymour Krayner

Nathan Patrick Meersman

Kathryn Elizabeth Murphy

Evan Scott Pereira

Mary Elizabeth Prescott

Minor: Chemical Engineering

Nicholas Paul Santangelo

Julia Franciose Scott

Minor: Music

Talia Pearl Solomon

Minor: Spanish

Alexis Marie Sturgis

Meghan Elise Trahan

Minor: Sustainability Engineering

Gisele Cristina Trivino

Minor: Chemical Engineering

Anna Isabella Valdez

Tyler John Van Nostrand

Adam Henry Weiss

## **Humanities and Arts:**

Martin Joseph Fitzgerald VI

*Double Major*

Minor: Materials

Elizabeth Joy Thompson

*Double Major*

## **Industrial Engineering:**

Emily Margaret Aldrich

Minor: Manufacturing Engineering

Minor: Drama/Theatre

Elizabeth Anne Bernier

Minor: German

Mark DeVries

Lin Jiang

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Minor: Computer Science

Elizabeth Koestler Karpinski

Minor: Data Science

Minor: Writing and Rhetoric

Hussain Muhammad Abdullah Bin Riaz

Khan

Tyler Kilkenny

Maria Lockette

Emily Jeanette Martin

Minor: Business

Mark Stewart Meyers

Serra Beysun Onder

*Double Major*

John Wark Perry

Minor: Management Information Systems

Stephen James Reilly

Minor: Business

Molly Maybel Rockwood

Minor: Business

Pabitra M. Saikee

Marissa Elizabeth San Andres

Gretchen Ann Siewert

Minor: German

Minor: Management Information Systems

Veronica Isabel Soto-Belloso

*Double Major*

Jose Antonio Spiegel

Rong Tang

*Double Major*

Minor: Computer Science

Ashley Renee Valdez

Minor: Business

Luis Eduardo Vargas

Minor: Business

Andres Vega D'Achiardi

Minor: Business

Justice Williams

Minor: Business

Minor: International and Global Studies

Yuanhao Wu

Mona Yuan

Minor: Economics

Nan Zhang

*Double Major*

## **Interactive Media and Game**

### **Development:**

August Deford Beers  
*Double Major*  
Rachel Jeanne Burton  
Minor: Spanish  
Christopher Dowding  
Alexander Ximon Guerra  
Minor: Computer Science  
Richard Howard Hayes III  
*Double Major*  
Graham Fisher Held  
Minor: Computer Science  
Myles Brandon Karam  
*Double Major*  
Max Boileau Kinney  
LilyAnne Lewis  
*Double Major*  
Rosemary C. Lindsay  
*Double Major*  
Thomas Lourenco  
Connor Andrew Mattson  
Sienna Monique McDowell  
Jonas McGowan-Martin  
*Double Major*  
Thomas James Meehan  
*Double Major*  
Matthew J. Micciolo  
Minor: Electrical and Computer  
Engineering  
Adam Edmonds Myers  
*Double Major*  
Yahel Nachum  
*Double Major*  
John Perry Nelson  
*Double Major*  
Paul Whitin Orvis V  
*Double Major*  
Andrew Laurence Ray  
*Double Major*  
Brian Rubenstein  
*Double Major*  
Michel Sabbagh  
Isabella Mary Schiavone  
*Double Major*  
Gareth Reid Solbeck  
*Double Major*  
Matthew Thompson  
Dongjie Wang

Jie Weng

### **Interdisciplinary:**

Olivia Suzanne Shraibati

### **International Studies:**

Nikos Alexander Kalaitzidis  
*Double Major*  
Minor: Spanish

### **International and Global Studies:**

Gyneth Campbell  
*Double Major*  
Minor: Materials  
Samantha Mechelle Gauthier  
Bryce Christian Kaw-uh  
*Double Major*  
Carolina Elizabeth Ramos  
*Double Major*  
Veronica Isabel Soto-Belloso  
*Double Major*

### **Management Engineering:**

Jane Marie Bingel  
Concentration in Operations Management  
Allison Kirkpatrick Buckley  
Concentration in Operations Management  
Minor: Entrepreneurship  
Travis John Clark  
Concentration in Civil Engineering  
Zulean Cruz-Diaz  
Concentration in Operations Management  
Minor: Environmental and Sustainability  
Studies  
Minor: International and Global Studies  
Chad Daniel DellaPorta  
Concentration in Operations Management  
Sean William Doncaster  
Concentration in Operations Management  
Nicholaus David Jasinski  
*Double Major*  
Concentration in Operations Management  
Minor: Entrepreneurship  
Victoria Cristine Loehle  
*Double Major*  
Casey Marie Magrath  
Concentration in Chemistry  
Brandon Malofsky  
Concentration in Operations Management

**Management Engineering cont.:**

Marcus Middleton  
Concentration in Operations Management  
Minor: Entrepreneurship  
Morgan N. Mitchell  
Concentration in Mechanical Engineering  
Lucas James Muntz  
Concentration in Biomedical Engineering  
Brian Kerry Murtagh  
Concentration in Operations Management  
Hannah Eliza Navarro  
Concentration in Civil Engineering  
Aristotelis Papadopoulos  
Concentration in Operations Management  
Alyssa Ann Perry  
Concentration in Civil Engineering

**Management Information Systems:**

Nicolas Divoll Adami-Sampson  
Minor: Computer Science  
Kyle Jordan Hudgins  
Minor: Computer Science  
Ryan J. Leaf  
Zahr A. Lyttle  
Tim Pascal Marschall  
Minor: Interactive Media and Game  
Development  
Serra Beysun Onder  
*Double Major*  
Nicholas A. Pataky  
Juan Camilo Rodriguez Hincapie  
John Chadwick Ross  
Nicholas Peter Shannon  
Minor: Computer Science  
Minor: Drama/Theatre  
Rong Tang  
*Double Major*  
Minor: Computer Science  
Drew Cronin Wethern  
Ziyu Zhou

**Management:**

Andrew David Burgoyne

**Mathematical Sciences:**

Lauren Michelle Baker  
*Double Major*  
Timothy Joseph Berube

Marilda Bozdo  
Minor: Computer Science  
Blaine Roderick Bursey  
Rose Tamara Carmichael  
*Double Major*  
Yao Yuan Chow  
*Double Major*  
Thomas deRito  
Minor: Computer Science  
Ziyan Ding  
*Double Major*  
Yani Lindbergh Dvorsky  
Khasan Muratovich Dymov  
Minor: Business  
Shannon Colella Feeley  
Minor: Computer Science  
Sadie Grace Gauthier  
Minor: Computer Science  
Marcel Gietzmann-Sanders  
Xinyang Guan  
Minor: Music  
Minor: Data Science  
Zitai Huang  
Alexander Joseph Huot  
*Double Major*  
Lin Jiang  
*Double Major*  
Minor: Computer Science  
Junjiang Le  
*Double Major*  
Liam Michael Ogren  
*Double Major*  
Zachary Michael Peters  
Nicholas John Porter  
*Double Major*  
Manuel Alberto Reyes  
Gina Marie Rios  
Weizhe Shen  
Ian Renee Shusdock  
*Double Major*  
Kevin Brian Specht  
*Double Major*  
Zilu Tian  
*Double Major*  
Robert Conrad Vigeant  
*Double Major*  
Minor: Bioinformatics and Computational  
Biology

**Mathematical Sciences cont.:**

Emily Catherine Weber  
Minor: Computer Science  
Natalie Wellen  
Minor: Bioinformatics and Computational  
Biology  
Taylor James York  
Minor: Media Arts  
Rui Yu  
*Double Major*  
Xinzhe Zhang  
Minor: Computer Science

**Mechanical Engineering:**

Corey Alicchio  
Concentration in Mechanical Design  
Joseph Alejandro Alvarado  
Minor: Electrical and Computer  
Engineering  
Mushtaq Al Zuhairi  
*Double Major*  
Lindsey Andrews  
Concentration in Biomechanical  
Perry Joseph Ascani  
Minor: Aerospace Engineering  
Norma Bachman  
*Double Major*  
Jon Joseba Barruetabena  
Andrew James Bauer  
Kaitlin Beach  
Concentration in Biomechanical  
Minor: Biology  
Alex Beaudoin  
Minor: Materials  
Michael Albert Beinor  
Concentration in Mechanical Design  
Minor: Materials  
Penelope Belliard-Urena  
Zachary Belohoubek  
Minor: Business  
Megan Shannon Irene Belval  
Minor: Electrical and Computer  
Engineering  
Minor: Environmental and Sustainability  
Studies  
Andrew Belz  
Jacob James Billington  
Charles Whitfield Bleakney IV

Shaun Joseph Bonefas  
Concentration in Materials Science and  
Engineering  
Evan Bosia  
*Double Major*  
Robert Boulanger  
Minor: Drama/Theatre  
Brandon Johann Bozeat  
Minor: Robotics Engineering  
Erin Rose Bracken  
Daniel Joseph Braconnier  
Minor: Materials  
Casey Joseph Broslawski  
Minor: English  
Minor: Aerospace Engineering  
Frederick Harmon Burgwardt  
Concentration in Mechanical Design  
Gyneth Campbell  
*Double Major*  
Minor: Materials  
Delaney Celeste Cassidy  
Concentration in Biomechanical  
Ruizhe Chen  
Giuseppe Ciliotta Bezada  
Michael Robert Clark  
Concentration in Mechanical Design  
Minor: Business  
Isaac Coelho  
Richard J. Coffin  
Concentration in Materials Science and  
Engineering  
Minor: Chemistry  
Rachel Marie Connolly  
*Double Major*  
Ian Franklin Converse  
Michael Cournoyer  
Antoine Jawan Crews  
Cameron Crook  
*Double Major*  
Minor: Materials  
Garrett Morse Curran  
Cameron Thomas Wang Currie  
*Double Major*  
Paul Frederick Danielson  
Concentration in Mechanical Design  
Scott Davison  
Frank John DeGiacomo  
Minor: Entrepreneurship  
Minor: Media Arts

**Mechanical Engineering cont.:**

Veronica May Delaney  
Peyton Lian Delgorio  
*Double Major*  
Paul Anthony DePlacido  
Drew D. DeRubeis  
Minor: Law and Technology  
Anthony Stephen DiBiasio  
Natalie Lynne Diltz  
Minor: Electrical and Computer  
Engineering  
Minor: Music  
Jessica Susan DiPersio  
Cameron Downey  
Alexander Paul Draper  
Devin Joshua Duarte  
Concentration in Thermal-Fluid  
Engineering  
Michael M. Duclos, Jr.  
Andrew Parker Dunne  
Minor: Business  
Zoe Olivia Eggleston  
Zachary M. Ericson  
Minor: Business  
Bianca Nathalie Espinoza  
Joseph Christopher Fancher  
*Double Major*  
Matt Farrell  
Keirstan Marie Field  
Alexander Elliott Fitzgerald  
Kyle Peter Fitzgerald  
Concentration in Mechanical Design  
Brianna Rosalee Fogal  
Jonathan Samuel Friedman  
Minor: Computer Science  
Huda O. Gad Imam  
Minor: Environmental and Sustainability  
Studies  
Julie Anne Gagnon  
Minor: Manufacturing Engineering  
Lucy Ladera Garvey  
Concentration in Biomechanical  
Adam James Gatehouse  
Minor: Materials  
Theofilos Gatsos  
Concentration in Engineering Mechanics  
Keaton Reynold William Goddard  
Tyler Robert Golemo  
Minor: Spanish  
William Whidden Gorman  
Caitlin M. Grow  
Matthew Ryan Haley  
Junxiu Han  
Cameron Alfred Hastings  
Sean Allen Hathaway  
Yulun He  
*Double Major*  
Emma Healey  
Alora Nichole Hillman  
*Double Major*  
Minor: Computer Science  
Adam Joseph Huber  
Concentration in Mechanical Design  
Joseph Donald Igoe  
Emmit J. Joyal  
Hallie D. Kenyon  
Minor: Sustainability Engineering  
Mikhail Khibkin  
Minor: Materials  
Kimberlee Nicole Kocienski  
Minor: Manufacturing Engineering  
Connor Lewis Kurtz  
Brittany Marie Kyer  
Concentration in Materials Science and  
Engineering  
Minor: Materials  
Robert Kevin LaFlamme  
Minor: Business  
Brandon Lee Lam  
*Double Major*  
Mead T. Landis  
*Double Major*  
Francis Joseph LaRovere IV  
Concentration in Materials Science and  
Engineering  
Anthony Joseph Lawinger  
Minor: Materials  
Matthew David Lepine  
Concentration in Mechanical Design  
Yunda Li  
Johnly Lin  
Minor: Electrical and Computer  
Engineering  
Kevin Neil Lynch  
Kristin Janet Markuson  
Minor: Materials  
Sienna Jo Mayer  
*Double Major*

**Mechanical Engineering cont.:**

Kevin Joseph Maynard  
Mila Monique Maynard  
Minor: Spanish  
David John McDonald III  
Concentration in Biomechanical  
Shawna Lee McGaffigan  
Connor James McGrath  
Concentration in Mechanical Design  
Connor McGuirk  
Michael McMahan  
Minor: Spanish  
Christian Robert Morneau  
Minor: Business  
Minor: History  
Daniel John Mortarelli  
Minor: Materials  
John Patrick Mulready  
Steven Michael Murphy  
Concentration in Mechanical Design  
Minor: Robotics Engineering  
Montana Paige Myatt  
Minor: International and Global Studies  
Minor: Music  
Kyla Nicole Nichols  
*Double Major*  
Matthew William Nicholson  
Minor: Business  
Ashley Rae Nistler  
Concentration in Mechanical Design  
Doon Nordemann  
Minor: Robotics Engineering  
Jacqueline Elizabeth O'Connor  
Peter Ofsthun  
Karen Christine Orton  
*Double Major*  
Minor: Spanish  
Lily Marie Ouellette  
Concentration in Thermal-Fluid  
Engineering  
Allison Elizabeth Paquin  
*Double Major*  
Christopher Robert Parisi  
Minor: Materials  
Winton James Parker  
Concentration in Mechanical Design  
Edward Peglow  
Minor: Materials

Jarrold Peloquin  
Concentration in Mechanical Design  
Aaron John Pepin  
Concentration in Mechanical Design  
Brian Grant Peterson  
Minor: Robotics Engineering  
Minor: Manufacturing Engineering  
Nathan George Peterson  
Daniel Stephen Pfaff  
Minor: Electrical and Computer  
Engineering  
Michael C. Pickett  
*Double Major*  
Evan J. Pilaar  
Jake Porrazzo  
Nicholas John Porter  
*Double Major*  
Joseph Karl Presing  
Concentration in Mechanical Design  
Minor: Computer Science  
Matthew Puksta  
Rachael May Putnam  
*Double Major*  
Minor: Computer Science  
Sarah Frances Putnam  
Minor: Spanish  
David Sean Quinn  
Kelsey Anna Regan  
Concentration in Mechanical Design  
Minor: Business  
Sean Joseph Regan  
Concentration in Biomechanical  
Dylan Renshaw  
*Double Major*  
Jonathan Marcel Rheume  
Concentration in Biomechanical  
Rodrigo Jose Rivas  
Concentration in Mechanical Design  
Thomas Roberti  
Kimberly Rae Rosa  
Jonathan Ross  
Daniel A. Ruiz-Cadalso Rampolla  
Concentration in Mechanical Design  
Christopher Ryan  
Joseph Sabatino  
Jorge E. Santana  
Concentration in Mechanical Design  
Hannah Elizabeth Sattler  
Concentration in Biomechanical

**Mechanical Engineering cont.:**

Constantine Basil Scaperdas  
Minor: Aerospace Engineering  
Austin David Scott  
Minor: Computer Science  
Heather Lynn Selmer  
Yifan Shao  
Tara Jean Sharp  
Concentration in Materials Science and  
Engineering  
Michael Ernest Sheahan  
Sabbrin Shweiki  
Muhammad Suhail Siddiq  
Travis Simoneau  
Concentration in Thermal-Fluid  
Engineering  
Daniel Tompkins Singer  
Austin Smith  
Ryan A. Smolenski  
Scott Joseph Spear  
Zuhir Sras  
Alexa Jacquelyn Stevens  
Chase Logan St. Laurent  
*Double Major*  
Christian E. Strobel  
Concentration in Mechanical Design  
Jonathan Clyde Stump  
Daniel Alexander Sturman  
Minor: Robotics Engineering  
Zachary Royal Styer  
Minor: Manufacturing Engineering  
Yao Sun  
Karl T. Sundberg  
Kenneth Swanson  
Neneh Galen Switalla  
Minor: Aerospace Engineering  
Tyler Elizabeth Tao  
Aryelle Jaclyne Teixeira  
Concentration in Biomechanical  
Minor: Spanish  
Paige Ann Tencati  
Minor: Psychology  
Elizabeth Joy Thompson  
*Double Major*  
Thiago Renato Motta Tose  
Keegan Howard Train  
Concentration in Mechanical Design  
Logan Tutt  
*Double Major*

Jonathan Morgan Van Blarcum  
Minor: Computer Science  
Tiana Vasquez  
Maggie Velloso  
Jonathan Edward Jack Viens, Jr.  
Justin Scott Vitiello  
Ann Marie Votta  
Zhijie Wang  
Ellyn Marjorie Webber  
Concentration in Mechanical Design  
Jessica Rae Wedell  
Concentration in Thermal-Fluid  
Engineering  
Minor: History  
Minor: Aerospace Engineering  
Madelyn Diana Werth  
Eric Yit Lin Williams  
John Vincent Williams  
*Double Major*  
Michael Andrew Whitfield Wray  
Yu-sen Wu  
*Double Major*  
Minor: Computer Science  
Emily Mengyue Yu  
Concentration in Mechanical Design  
Minor: Robotics Engineering  
Hanqing Zhao  
Yingzhe Zhao  
Minor: German

**Physics:**

William David Beatty  
Wesley Kent Belleman  
Rose Tamara Carmichael  
*Double Major*  
Muping Chen  
Minor: Mathematics  
Benjamin James Dringoli  
Minor: Mathematics  
Minor: Nanoscience  
Yulun He  
*Double Major*  
Norbert Hugger  
Sergey Korkhov  
Junjiang Le  
*Double Major*  
Amanda Lynn Leahy  
Peter Donald Melander  
*Double Major*

**Physics cont.:**

Ivan Melnikov

*Double Major*

Liam Michael Ogren

*Double Major*

Christopher Pierce

Yuchen Wang

Minor: Mathematics

Rui Yu

*Double Major***Professional Writing:**

Kimberly Marie Coddling

*Double Major*

Alexandra Marie D'Ordine

*Double Major*

Richard Howard Hayes III

*Double Major*

LilyAnne Lewis

*Double Major*

Abbegail Hawkins Nack

*Double Major*

Meredith Anne Rioux

*Double Major*

Isabella Mary Schiavone

*Double Major*

Robert Conrad Vigeant

*Double Major*Minor: Bioinformatics and Computational  
Biology**Psychological Science:**

Lindsay Hanna Braith

Rebecca Leigh Burns

*Double Major***Robotics Engineering:**

Georgios Ardamerinos

Alexandra Leigh Bittle

*Double Major*

Evan Bosia

*Double Major*

William Boyd

*Double Major*

Domenic Bozzuto

*Double Major*

Brendan Devon Casey

Minor: Computer Science

Michael Deqiang Chan

Tyler Charles Chaulk

Minor: Manufacturing Engineering

Dasan Emil Costandi

Minor: Electrical and Computer  
Engineering

Cameron Crook

*Double Major*

Minor: Materials

Nicholas Charles Cyganski

Minor: Entrepreneurship

Odell Dotson

Joseph R. Fainer II

Minor: Mechanical Engineering

Thomas W. Farro

Minor: Interactive Media and Game  
Development

Katie Gandomi-Bernal

*Double Major*Minor: Electrical and Computer  
Engineering

Nicholas Patrick Gigliotti

Minor: Mechanical Engineering

Ari Benjamin Goodman

Minor: Computer Science

Joshua Philip Graff

Minor: Computer Science

Jacob Ryan Hackett

*Double Major*

Breanne Happell

*Double Major*Minor: Electrical and Computer  
Engineering

Tucker Caelan Ellis Haydon

*Double Major*

Minor: German

Minor: Physics

Anna Celeste Hernandez

*Double Major*

Minor: Music

Alora Nichole Hillman

*Double Major*

Minor: Computer Science

James Lawrence Honicker

Minor: Electrical and Computer  
Engineering

Minor: Computer Science

Zachary James Hood

Minor: Management Information Systems

Rene Cochran Jacques

**Robotics Engineering cont.:**

Aaron Jaeger  
Nathaniel Jefferson  
*Double Major*  
Samuel Khalandovsky  
Minor: Computer Science  
Casey Robert Kracinovich  
Minor: Mechanical Engineering  
Brandon Lee Lam  
*Double Major*  
Mead T. Landis  
*Double Major*  
Tapanont David Laovoravit  
Minor: Computer Science  
Erin Marie Leger  
Arthur Jebediah Wilder Lockman  
*Double Major*  
John Averaldo Lomi  
Alonso Martinez  
*Double Major*  
Michael Stewart McConnell  
Minor: Computer Science  
Alexander Preston O'Brien  
Minor: Computer Science  
Gabrielle Rose O'Dell  
Minor: Mechanical Engineering  
Minor: Manufacturing Engineering  
Karen Christine Orton  
*Double Major*  
Minor: Spanish  
Kevin James Ouellette  
Minor: Computer Science  
Nicholas Joseph Panzarino  
Minor: Computer Science  
Lumbini Neha Parnas  
Alexandre Jean Pauwels  
*Double Major*  
Michael C. Pickett  
*Double Major*  
Daniel Joseph Pongratz  
Lauren Nicole Pontbriant  
Gregory Michael Port  
Minor: Interactive Media and Game  
Development  
Minor: Music  
Rachael May Putnam  
*Double Major*  
Minor: Computer Science

Peter H. Raspe  
Minor: Computer Science  
Trevor A. Rocks  
Alexander Norman Ruggiero  
Minor: Manufacturing Engineering  
Francisco Montserrat Sanchez Chavarria I  
Dean Schifilliti  
Charles Sinkler  
*Double Major*  
Yesugey Batu Sipka  
*Double Major*  
Chase Logan St. Laurent  
*Double Major*  
Callum Rory Taylor  
Minor: International and Global Studies  
Logan Tutt  
*Double Major*  
Yigit Uyan  
Minor: Computer Science  
Minor: Electrical and Computer  
Engineering  
Ryan Wall  
Jacob William Wennersten  
Minor: Computer Science  
Ryan Michael Wiesenber  
*Double Major*  
Yu-sen Wu  
*Double Major*  
Minor: Computer Science  
Kyle Young  
*Double Major*  
Shao Zhou  
Minor: Mathematics  
Yihong Zhou  
*Double Major*

**Date:** May 9, 2017  
**To:** WPI Faculty  
**From:** Committee on Graduate Studies and Research (Prof. Troy, Chair)  
**Re:** Motion to approve the May 2017 graduate student graduation list

**Motion:** The Office of the Registrar reports that the following candidates have either completed all the requirements for the degree designated in the department or program indicated, or are expected to complete their degree requirements before May 11, 2017. They therefore are or will be eligible to receive that degree, and on behalf of the Committee on Graduate Studies and Research, I move that – pending final verification by the Registrar that all those on the list have in fact completed their degree requirements - they be approved for May 11, 2017 graduation.

**Doctor of Philosophy**

**Biomedical Engineering:**

Jason Matthew Forte

**Civil Engineering:**

Jake Edmond Hughes

Xiaokong Yu

**Computer Science:**

Rodica Neamtu

Curtis Robin Taylor

Dongqing Xiao

Xiaolu Xiong

**Electrical and Computer Engineering:**

Ain-ul-Aisha

Paulo Victor Rodrigues Ferreira

Gorka Irazoqui

Lili Yuan

**Materials Science and Engineering:**

Aaron Marc Birt

Carl Soderhjelm

Anthony George Spangenberg III

**Mathematical Sciences:**

Binod Manandhar

William Charles Sanguinet

Liang Wang

Heng Zuo

**Robotics Engineering:**

Niravkumar Amrutlal Patel

Dmitry Aleksandrovich Sinyukov

**Master of Business Administration**

Pin Anupongongarch

Charles Christopher Banos

Danielle M. Batey

Michael Joseph Bonavita

Stephen Tang Chiang

Tyler Bruce Cichowlas

Xiaohang Fei

Erika L. Fiala

Alexandra Monique Francois-Saint-Cyr

George Michael Giglio

Elisa Gjoka-Komoni

Radhika Gopinath

Jessica Elizabeth Grande

Jennifer M. Griffin-Driscoll

Morgan Lee Guardino

Mark Francis Harrington

Jennifer Lynn Harvey

Rachel Katharine Heller

Gregory Michael Hencir

Christopher Harold Johnson

Chirantan Jaydev Kanani

Adam Stafford Lafleur

Fuyan Li

Daniel Christopher Long

James Carroll McGlynn

Lisa Ann Michaud

Kelly Elizabeth Napier

Tristan Khoa Nguyen

Jessica Mary Ruscitti

Michael George Sack

Michael Shea

David Joseph Silva

Yiyang Song

Vijay Tirumalai A Pursai

Felicia Adrienne Vidito

**Master of Business Administration cont.:**

Daniel Adam Wolf  
Beilin Wu  
John F. Wyatt, Jr.

**Master of Engineering****Biomedical Engineering:**

Collette Madeline Bora  
Kailey J. Castellano  
Michael Raymond Day  
Stephanie R. Fariello  
Connor Michael Haley  
Jose Miguel Lazaro Guevara  
William Dao Ethan Noiles Gardner  
Kathryn Elisabeth Partridge  
Jessica Meredith Sacks  
Sarah Ann Sisson  
Brian James Sokoloff  
Julie Anne Tevenan  
Nicholas Patrick Musselman Trabucco

**Electrical and Computer Engineering:**

Sophie Landi Kouleya  
Qihang Wu  
Dezhi Zhao

**Power Systems Engineering:**

Vanith Kumari Chandura Biddappa  
Casey L. M. Hayes  
James Michael McGrath  
Phillip Miskinis  
Isaac John Sarnecki  
Sugandha Sharma Echeverria  
Robert Joseph Spelman

**Master of Mathematics for Educators**

Erica Danielle Ford

**Master of Science****Aerospace Engineering:**

Benjamin Matthew Andrews  
Mica Anglin  
Jackson Nicholas Andrew Gillenwaters  
Andrei Santino Breniman Koch  
Orland Lamce  
Ryan Alexander Loth

Mladen Pepic  
Joseph Albert Sater  
Weston Tyler Schlack  
Michael Parry Strauss  
Christian Alexis Zelaya

**Applied Mathematics:**

Amorn Chokchaisiripakdee  
Brian Gary Kodalen  
Blanche Sonia Ngo Mahop  
Xiao Shen  
Rui Yu

**Applied Statistics:**

Xinyu Chen  
Yutong Feng  
Jiaxin Liu  
Jinxin Tao  
Chi Zhang  
Tianyu Zou

**Bioinformatics and Computational****Biology:**

Max Fine Levine

**Chemical Engineering:**

Zijian Ma  
Zhengyang Yang

**Civil Engineering:**

Ekaterina Dimitrova Atanasova  
Carly Marie Giannini  
Gert Guldentops  
Jeremy Dylan Soderholm  
Yitong Zhao

**Computer Science:**

Regan Kurt Broderick-Sander  
Nicholas Francis Brown  
Dennis Joseph Cammer  
Anthony Joseph Chenard  
Hongzhang Cheng  
Yifei Gao  
Theresa Kathryn Inzerillo  
Tengyang Jia  
Aniket Prafulla Kadam  
Vsevolod Khibkin  
Benjamin John McMorran  
Ahmad Moghimi

**Computer Science cont.:**

Mohamed Essedik Najd  
Joshua T. Pritchett  
Yuxiang Ren  
Austin T. Rose  
Amit Kumar Srivastava  
Xiaoyan Sun  
Siqi Tang  
Mi Tian  
Arun Vadivel  
Tuan Quang Vu  
Shi Wang  
Kuang Xiong  
Fan Yang  
Libin Yang  
Mei Yang  
Zhaojun Yang  
Chengle Zhang  
Jingjun Zhang  
Shirui Zhang  
Yihao Zhou  
Hongmei Zong  
Kai Zou

**Construction Project Management:**

Ashley Elizabeth Hoffman  
Benjamin Logan Ross

**Data Science:**

Yihan Bao  
Weina Chen  
Xinyu Dai  
Cheng Deng  
Yichen Ding  
Bian Du  
Cut Famelia  
Shaowei Gong  
Qiuyi Hong  
Muyeedul Hoque  
Xiang Huang  
Shijie Jiang  
Yi Jiang  
Zhenhua Li  
Haiyan Liang  
Yuting Liang  
Caidan Liu  
Duanduan Liu  
Jiaqi Liu  
Zhiyuan Liu

Yanran Ma  
Thomas Francis Meagher II  
Neehar S. Mukne  
Qianchao Nie  
Zheng Nie  
Mu Niu  
Amogh Raghunath  
Zhongzheng Shu  
Feiyi Wang  
Qian Wang  
Guojun Wu  
Huan Ye  
Kanrong Yu  
Liang Zhang  
Shile Zhao  
Lu Zhong  
Boya Zhou  
Chen Zou

**Electrical and Computer Engineering:**

Zubair Ahmed Baig  
Raunak Mukund Borwankar  
Christopher Michael Byrne  
Rifat Ahmed Chowdhury  
James Colombo  
Ian Matthew Costanzo  
Matthew DeMorais Crivello  
Akanksha Chandrakant Devkar  
Justin David Dietz  
Mert Can Erad  
Abraham Fernandez-Rubio  
Yinkang Gu  
Zhang Guo  
Peter L. Hammond  
Mohit Ketan Hapani  
Mojtaba Hoshmand  
Dana Adam Howes  
Timothy Victor Jakubiak  
Bo Jiang  
Yizhou Jiang  
James Robert King  
Kristian Val Koptchaliyski  
Gabriel Kwofie  
Jianan Li  
Hao Liu  
Shengjie Lu  
Caitlyn Nicole Marcoux  
Emily Mazzola  
Nan Mu

**Electrical and Computer Engineering****cont.:**

Amanda Sue Piscopiello  
Likun Qin  
Shrutika Vijay Redkar  
Devdip Sen  
Matthew Alan Smith  
Travis Mark Stetson  
Harshal Vipul Tankaria  
Shihan Tian  
Ye Tian  
Anh Le Tran  
Cattaleeya Walczak  
Xiaojin Wang  
Wei Wei  
Timothy Wronka, Jr.  
Han Yang  
Yaofei Yang  
Tony Zhang  
Huan Zhao  
Yufei Zheng  
Xiangchen Zhu  
David Scott Ziegenfuss

**Environmental Engineering:**

Xinwen Xu

**Financial Mathematics:**

Catherine Jean Bonner  
Qiyue Chen  
Yongqiang Cui  
Shuaichuan Feng  
Yuhui Gong  
Xiangyu Huang  
Xiao Liang  
Xuan Ning  
Qingyun Ren  
Chuangshi Shen  
Yupu Song  
Fang Wan  
Lu Wang  
Shuai Zhai  
Jiarui Zhang  
Yue Zhao  
Zuo Zhiyao  
Siyue Zhou  
Tingwen Zhou

**Fire Protection Engineering:**

Ronald Eric Brewer  
John Edward Caliri, Jr.  
Anthony Mario Capuano  
Steven Kyle Dupre  
Samuel Vaughn Flibbert  
Meghan Elizabeth Goodwin  
Francisco Kang  
Camden Michael Knoff  
Qi Li  
Alexandra Sherman Miller  
Jonathan Nicholas Mirabito  
Wilfredo Ramos, Jr.  
Shannon Marie Rice  
Keith Jopseph Sullivan  
Mai Tomida  
Panyawat Tukaew

**Industrial Mathematics:**

Joshua Elijah Keller  
Jonathan David Orr

**Information Technology:**

Akash Pramod Amritkar  
Ujwal Annadata  
Nupur Anil Bansod  
Pavan Kumar Chavva  
Sangrou Chen  
Yijia Chen  
Anurag A. Desai  
Sachin Goel  
Minal Hemantkumar Goyal  
Christopher Joseph Thomas Gregory  
Zhuoming He  
Prateek Jain  
Akshata Kamat  
Viraj Vinay Karnik  
Abha Kulkarni  
Nitinnarayanan Lakshminarayanan  
Geyang Li  
Tingyu Li  
Fangyi Liu  
Si Liu  
Yixin Luo  
Piyush Malviya  
Kamal Mihani  
Sonali Digambar Naik  
Sai Bharat Pinnamaraju  
Prerana Hemanta Rout

**Information Technology cont.:**

Namrata Saha  
Sheetal G. Salunke  
Ashwin Sathiyavageeswaran Sathy  
Saurabh Kumar Singh  
Sugandha Singh  
Jigisha Sinha  
Divya Tandon  
Chenhao Tang  
Wilander Anthony William Tauro  
Zhaoran Wang  
Yidan Xu  
Xiaoyu Yao  
Chandan Yathagadahally Puttaswamy  
Anupama Anupam Yeole  
Hang Yu  
Yifan Zhang  
Feng Zhu  
Yi Zhu

**Interactive Media and Game****Development:**

Yakin Najahi  
Ravi Arun Parekh  
Kathryn Lexie Elizabeth Williams

**Management:**

Lisa Marie Clark  
Zachary Louis Culp  
Timothy Curtis Dow  
Samantha Ann Ervin  
Elizabeth Anne Hansen  
Mojtaba Hoshmand  
Adam Brian McNally  
Morgan N. Mitchell  
Luke Christian Pantuosco  
Xi Qiao  
Rachel Catherine Riley  
Nicolle Alexandra Shandrow  
Scott Joseph Spear  
Yijiang Xu

**Manufacturing Engineering:**

David Barger  
Michael Robert Barney  
Lee Edward Bouldin  
Carlo Neil Cruz Domaoan  
Ricardo Jose DosSantos  
Andrew Curtiss Egger

Eric Christopher Falor  
Joseph Gill  
Sean Allen Hathaway  
Mahesh Shankar Kottalgi  
Botong Li  
Matthew Michael McCormack  
Jessica Anne Meinsen  
Edson Novinyo  
Mingjian Ruan  
Michael D. Walker  
Zhengyu Wang  
Maranda Erin Wong

**Marketing and Innovation:**

Shijie An  
Junan Chen  
Yuran Hu  
Qingya Huang  
Yanling Lin  
Tianqing Ma  
Yixiong Pan  
Ruo Chen Xing  
Wenhui Xu  
Zhongyi Yang  
Ying Ying  
Pei Zang

**Materials Science and Engineering:**

Kefan Chen  
Joshua Wayne Curto  
Gabriel Demeneghi Ludke  
Yang Feng  
Yiming Lei  
Zhuoxian Lin  
Benjamin C. Lippitt  
Jing Liu  
Michael James Lorenzo  
Peisong Peng  
Houjue Wang  
Weijie Wu  
Tao Yan  
Yang Yang  
Caicai Ye  
Sheng Ye  
Qing Yin  
Jing Zhang  
Tianyi Zhou

**Mechanical Engineering:**

Christian Anthony Acosta  
Mustafa Shaker Alshaikh  
Andrew James Bauer  
Casey Joseph Broslawski  
Eleanore Mary Carson  
Tianyu Cheng  
Michael Cournoyer  
Peter Nicholas DiMaggio  
Alexander Paul Draper  
Jaime Elisabeth Espinola  
Matthew Ryan Haley  
Tyler Stephen Hanna  
Craig D. Healey  
Connor Lewis Kurtz  
Joseph Frederick Lidwin  
Daniel E. Lipson  
Jeffrey Daniel Lopes  
Rahul Mukund Mahajan  
Bryan James Manning  
Martin Phelan  
Steven Dean Ruotolo  
Matthew Anthony Ryder  
Hannah Elizabeth Sattler  
Edmund Tsiri Semaha  
Stefan McMillan Smith  
Yinan Sun  
Tyler Elizabeth Tao  
Shadi Tasdighi Kalat  
Vincent P. Tavernelli  
Jonathan Morgan Van Blarcum  
Juan Vazquez  
Mark Andrew Walker  
Eric Yit Lin Williams  
Hanqing Zhao

**Operations Analytics and Management:**

Weiyi Ding  
Elizabeth Rose Pagaduan Fitch  
Pooja Ameet Gandhi  
Xiaofan Gu  
Jennifer Lynn Harvey  
Yao Huang  
Nisi Ji  
Xiaolin Jiang  
Elizabeth Koestler Karpinski  
Tingting Lin  
Jielei Liu  
Yue Liu

Pankaj Mittal  
Sneha Dnyaneshwar Patil  
Yi Peng  
Le Xiong  
Yin Yao  
Jie Zhao

**Physics:**

Muping Chen  
Yuchen Wang  
Wiphu Youyen

**Power Systems Management:**

Brandon Nicholas Bravetti  
Zakaria Ouzzif

**Robotics Engineering:**

Mihir Acharya  
Nikhil Kamalkumar Advani  
Ozan Akyildiz  
Georgios Ardamerinos  
Michael John Baucum  
Aditya Bhat  
Andres Patricio Cabrera Flor  
Kevin Michael Cariddi  
Nikhil Dilip Deshpande  
Anany Dwivedi  
Gabrielle H. Franzini  
Renato Girardi Gasoto  
Nathan Drew George  
Colin Michael Gladding  
Ari Benjamin Goodman  
Chinmay Vithoba Harmalkar  
Sayre Paul Jeannet  
Ananth Jonnavittula  
Dharmateja Kadem  
Sahil Kejriwal  
John Devir Kelly  
Samuel Khalandovsky  
Rohan Sanjay Kothari  
Syamprasad K Rajagopalan  
Aravind Krishnan  
Rahul Krishnan  
Luis Miguel Lasa Navarro  
Jeffrey Nicholas Miscione  
Kiran Mohan  
Mitchell Kenneth Muller  
Vishaal Munusamy Kabilan  
Brent Stevens Palermo

**Robotics Engineering cont.:**

Nicholas Joseph Panzarino  
Kunal Madhukar Patel  
Kunal Ratiram Patil  
Ria Hancy Pereira  
Benjamin Pinaya  
John William Rogers Pryor  
Anand Ramakrishnan  
Aman Rana  
Alex Michael Rutfield  
Ankit Saini  
Junius Santoso  
Eric Sinclair Savage  
Ayush J. Shah  
Rohit S. Sheth  
Bhawna Shiwani  
Matthew Evan Silverman  
Gregory John Slavin  
Ulkesk Sanjay Solanki  
Nuttaworn Sujumnong  
Dikshya Swain  
Varun Visnudas Verlencar

**System Dynamics:**

Stefanie Elizabeth Anderson  
George Johnson-Orban  
Raid Mahmoud Zaini

**Systems Engineering:**

Aaron Bruce Johnson  
Jeremy Kabacinski  
Nathaniel John Law  
Joseph Frank Pticar  
Sarah Elizabeth Woughter