

WORCESTER POLYTECHNIC INSTITUTE

October 13, 2017

To: The WPI Faculty

From: Mark Richman
Secretary of the Faculty

The second Faculty meeting of the 2017-2018 academic year will be held on **Friday, October 13, 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
 - Consideration of the Consent Agenda (including Minutes from 9-12-17)

2. President's Report L. Leshin

3. Provost's Report B. Bursten

4. Vice Provost for Research – Report B. Vernescu

5. Committee Report (for Open Discussion)
 - Committee on Financial and Administrative Policy (FAP) T. Dominko
 - Summary of 2016-17 WPI Faculty Compensation Study

6. Committee Business
 - Committee on Academic Operations (CAO) G. Heineman
 - October 2017 Undergraduate Student Graduation List

 - Committee on Graduate Studies and Research (CGSR) K. Troy
 - October 2017 Graduate Student Graduation List

 - Committee on Academic Policy (CAP) M. Humi
 - Committee on Graduate Studies and Research (CGSR) K. Troy
 - Motion to use a fully online process for WPI Student Course Evaluations

 - Committee on Graduate Studies and Research (CGSR) K. Troy
 - Motion to modify the guidelines for financial assistance to Teaching and Research Assistants, Graduate Fellows, and Graduate Assistants

7. New Business

8. Announcements

9. Adjourn

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WORCESTER POLYTECHNIC INSTITUTE

Faculty Meeting Minutes

September 12, 2017

Summary:

1. Call to Order
2. Welcome
3. President's Report
4. Provost's Report
5. Deans' Reports
6. Reading of Memorial Resolution
7. Introductions of New Faculty Members
8. Closing Announcements
9. Adjourn to *the Quorum* in Higgins House

Detail:

1. Call to Order

The first Faculty meeting of the 2017-2018 academic year was called to order at 3:20 pm in OH 107 by **Prof. Richman** (ME). The meeting agenda and the consent agenda (including the minutes from May 9, 2017) were approved as distributed.

2. Welcome

Prof Richman (ME) introduced himself and recognized Prof. James Hanlan as this year's Parliamentarian and Prof. Helen Vassallo, who will serve as Parliamentarian in B Term. Prof. Richman described the faculty meetings as opportunities to come together across all disciplines to weigh in on matters of campus-wide concern, and saw the meetings as critical to maintaining our campus community. Prof. Richman will try to make time at the meetings this year for brief periodic updates from the Deans and the VPR. Prof. Richman announced the opening of the Quorum, which is a new café located in Higgins House designed to bring together people from across the campus to become friends and collaborators. Prof. Richman concluded with a lighthearted welcome to newcomers.

3. President's Report

President Leshin presented highlights from her Town Hall presentation made earlier in the day. (See Addendum #1 attached to these minutes.) She announced that there are approximately 1125 students in the incoming class, which is the same size as last year's, and that 43 percent of the class are women, compared to 34 percent last year. There are approximately 800 new graduate students, and approximately 40 undergraduate transfer students.

President Leshin explained that we are in the second full year of the implementation of the Strategic Plan. She is focused on developing the programming for the Foisie Innovation Studio, which will open next summer. President Leshin expressed her support for our research enterprise. She indicated that planning for new campus facilities is proceeding in parallel with the planning of a new capital campaign that will be launched soon.

President Leshin emphasized the importance of our campus diversity, inclusion, and talent efforts. With respect to campus technology, President Leshin explained that our ongoing Enterprise Transformation Planning (ETP) includes moving from Banner to Workday.

President Leshin is carefully watching and reacting to the shifting national political environment (including changes to federal regulations such as Title IX and cuts in federal research funding). WPI is reassessing many of its policies and procedures in the context of risk management. She indicated that the WPI faculty conduct policies do not currently reflect best practices, and that our research misconduct policy is out of compliance. A group of Trustees and Faculty Governance leadership is working to bring revisions of these policies to the Faculty. .

President Leshin summarized the three main pillars of the strategic plan: distinctive undergraduate education (more in four; global projects for all; and major and a mission); research and graduate education (competency-based online education; the WPI Ph.D. plan; and the research enterprise); and reputation and visibility (center for project-based learning; global partnerships; Foisie innovation studio).

President Leshin concluded by discussing the idea of bringing all globally-themed pieces of our academic programs together within a single academic division tentatively named the "Global Impact Division." The proposed division would include the global projects program, the great problems seminar, a new global impact media lab, a new global competency component of the curriculum, a central place to organize our global partnerships, and a new home for NGOs in residence. President Leshin indicated that she would like to conduct a search for a Dean of this division to replace the Dean of IGSD.

4. Provost's Report

Provost Bursten announced the opening of the new Research Solutions Institute, which will help faculty members in their involvement with multi-investigator, multi-university research proposals. Provost Bursten pointed out that nine out of the 17 new tenured and tenure-track faculty hires are women, including two women of color. He attributed this success in large part to the role played by diversity advocates on each search committee.

Provost Bursten emphasized that in turbulent political times especially, WPI community members should rely on one another for support. He also expressed his empathy for the families, friends and colleagues of who were affected by the recent hurricanes in Texas and Florida. Provost Bursten expressed no tolerance for climate change denial, and asked for support in our efforts to become an environmentally sustainable campus.

3. Deans' Reports

Dean Soboyejo (Eng) explained that in the past year efforts have been made to bring diverse groups of faculty members together to explore synergies within areas of research guided by the strategic plan. This year, seed grants will be given in the areas of materials and advanced manufacturing, biology and biotechnology, and the "smart world," which includes robotics, autonomous vehicles, wireless sensors, and smart buildings. He indicated that through both TTT and NTT faculty hires, efforts have been made to strengthen the engineering core at WPI. Dean Soboyejo thanked Prof. El-Korchi (CEE) for his work as interim Department Head in shepherding the Fire Protection Engineering department to its current healthy state, Prof. Massoud (ECE) for his work as Department Head in Electrical and Computer Engineering, and Prof. Cyganski for agreeing to serve as the interim Program Director of Robotics Engineering until January 2018. The Engineering division at WPI will also support President Leshin's initiative to launch the Center for Global Public Safety (in collaboration with Tsinghua University), which will be directed jointly by Prof. Liang (ME) and Prof. Puchovsky (FPE). William McAvoy (VP for Univ. Adv.) and Karen Bean (Exec. Dir. univ. Adv.) have been instrumental so far in raising \$1.5M for seed programs and faculty support for work on problems related to global public safety. Dean Soboyejo announced that Prof. Demetry (ME) and Prof. Kmiotek (CHE) will serve as the Director and the Advisor of NAE Grand Challenges Scholars Program, which builds on work done to establish the program initiated by Dean Oates (BBT), Dean Heinricher (MA), and Prof. Cyganski (ECE). Dean Soboyejo explained that in his view, the plan for the Grand Challenges Scholars Program could well represent the next major step for WPI beyond the WPI Plan, and that it fell perfectly within President Leshin's strategic plan.

Dean Ginzberg (FBS) described the Foisie Business School (FBS) as one with a uniquely technical flavor. Its two most popular undergraduate programs are the B.S. in Industrial Engineering (first) and in Management Engineering (second). Half of the faculty members in Manufacturing Engineering are in the FBS. The Data Science program, the Center for Innovative Manufacturing Solutions, the Healthcare Delivery Institute, and the Tech Advisors Network (TAN) are all campus-wide efforts involving FBS faculty members. Dean Ginzberg identified several areas of activity in the FBS, including an expansion of the user experience in decision-making lab, and the Fin-Tech initiative. The FBS recently introduced graduate programs and certificates in supply chain management, and is currently enhancing all of its degree programs, including a revised MBA program that will take advantage of the fact that 80 percent of WPI's MBA students have STEM backgrounds.

6. Memorial Resolution

Prof. Humi (MA) read a memorial resolution for Prof. William B. Miller (MA), who passed away on November 12, 2016. (See Addendum #2 attached to these minutes.) The resolution **passed** and a moment of silence was observed in Prof. Miller's honor.

7. Introduction to New Faculty Members

The following tenured and tenure-track faculty members were introduced and each described their research interests very briefly: **Prof. John McNeill** (Head, ECE) and **Prof. Albert Simeoni** (Interim Head, FPE) by **Dean Soboyejo** (Eng); **Prof. Emily Douglas** (Head, SSPS) by **Provost Bursten**; **Prof. Nima Kordzadeh** (FSB) by **Prof. Zeng** (FSB); **Prof. Jeanine Plummer** (CEE) by **Prof. El-Korchi** (CEE); **Prof. Loris Fichera** (CS), **Prof. Tian Guo** (CS), **Prof. Kyumin Lee** (CS), and **Prof. Gillian Smith** (CS) by **Prof. Wills** (CS); **Prof. Andrea Arnold** (MA) and **Prof. Min Wu** (MA) by **Prof. Capogna** (MA); **Prof. Yu (Michael) Zhong** (ME) by **Prof. Yagoobi** (ME).

The following continuing non-tenure track faculty members, visiting faculty members, and others with teaching responsibilities were introduced and each described their research interests very briefly: **Prof. Hoda Atef Yekta** (FSB) by **Prof. Zeng** (FSB); **Prof. Laila Abu-Lail** (ChE) by **Prof. El-Korchi** (CEE); **Prof. Mohamad Farzinmoghdam** (CEE) and **Prof. Hassam Saleem** (CEE) by **Prof. El-Korchi** (CEE); **Prof. Douglas Selent** (CS) by **Prof. Wills** (CS); **Prof. Koksai Mus** (ECE) by **Prof. McNeill** (ECE); **Prof. Craig Danielson** (HUA), **Prof. James Eddy** (HUA), **Prof. Parker Everett** (HUA), **Prof. Kevin Lewis** (HUA), and **Prof. Joshua Rohde** (HUA) by **Prof. Boudreau** (HUA); **Prof. Katherine Foo** (IGSD), **Prof. Courtney Kurlanska** (IGSD), and **Prof. Nicholas Williams** (IGSD) by **Dean Rissmiller** (IGSD); **Prof. Bheemai Shankar Narayana Rao** (MA) by **Prof. Capogna** (MA); and **Prof. Mehul Bhatia** (ME), **Prof. Ahmet Can Sabuncu** (ME), **Prof. Jun Wang** (ME), and **Prof. Mei Yang** (ME) by **Prof. Yagoobi** (ME).

Provost Bursten introduced Katherine Chen as the new Executive Director of the STEM Education Center.

Eileen Brangan Mell (Assoc. CCO) detailed how Public Relations, Internal Communications and Research Communications teams work closely with partners in Marketing Communications to tell WPI's stories effectively. Ms. Mell encouraged all faculty members to share information with her or the members of the Public Relations, Internal Communications and Research Communications team early and often, promised to protect confidentiality, and encouraged everyone to sign up for one of this year's six Faculty Media Training programs. She will be contacting faculty members prior to the start of each term to solicit story ideas based on their work.

8. Closing announcements:

Dean Rissmiller (IGSD) encouraged all faculty members to participate as advisors of both off-campus IQP and MQP projects. **Prof. Humi** (MA), for the Committee on Academic Policy (CAP), asked for volunteers to serve on the Educational Development Council (EDC) and Undergraduate Outcomes Assessment Committee (UOAC). **Prof. Hansen** (HUA) spoke as co-Chair of Project Inclusion, which is a three-year self-study using a six-dimensional rubric developed by the New England Resource Center for Higher Education, to promote diversity, equity and inclusion at WPI. Prof. Hansen encouraged members of the WPI community to get involved where appropriate.

9. Adjournment

Meeting adjourned at 4:45pm, to ***the Quorum*** in Higgins House.

Respectfully Submitted,

Mark Richman
Secretary of the Faculty

Addendum on file with these minutes:

- 1. Addendum #1 President Leshin's Report – Sept 12 2017**
- 2. Addendum #2 Memorial Resolution for William Miller – Sept 12 2017**

Date: October 13, 2017

To: WPI Faculty

From: Committee on Academic Operations (Prof. Heineman, Chair)

Re: Motion to approve the October 2017 undergraduate student graduation list

Motion: **Motion:** The Office of the Registrar reports that the following candidates have, as of October 6, 2017, completed all of the requirements for the degree designated in the department or program indicated and are eligible to receive that degree. Therefore, as Chair of the Committee on Academic Operations, I move that these students be approved for October 6, 2017 graduation.

Bachelor of Science

Aerospace Engineering:

James Andrew Gadoury

Jarrett Bruce Jacobson

Binxin Liu

Biochemistry:

Megan Marie Andresano

Minor: Writing and Rhetoric

Khahnty Daraphet

Bryan Joseph Mendes

Biology and Biotechnology:

Brian Sebastian Amato

Megan Victoria Barter

Allison Rose Van Fechtmann

Biomedical Engineering:

Hasson Shakor Harris Wilcher

Hanne Marie Richardson

Fernando Salazar

Zachary Liborio Simpson

Chemical Engineering:

Junbo Chen

James Michael Commisso

Daniel Eckler

Civil Engineering:

Michael Train Fager-Thompson

Roberto Emilio Garcia

Computer Science:

Matthew Brennan

Minor: Management Information
Systems

Jordan Erin Feeley

Miyabi Ida Gaskell

Qiaoyu Liao

Vakhtang Margvelashvili

Christian Alexander Roberts

Electrical and Computer Engineering:

Mahir Ugurtan Derman

Nicholas Daniel Maino

Melvin Thomas Moore III

Environmental Engineering:

Matthew Alexander Michaels

Industrial Engineering:

Camila Siqueira Dias

Interactive Media and Game

Development:

Liam Wilson Miller

Management Engineering:

Jahan Suresh Dadlani

Concentration in Operations
Management

Management Information Systems:

Trivani Joy Shahi

Management:

Katelin Suzanne Wilfong

Mathematical Sciences:

Michael Perrone

Mechanical Engineering:

Alexander Nicholas Grammenos

Mackenzie Lynn Miner

Minor: Interactive Media and Game
Development

Jake Michael Nieto

Anubhav Prasad

Weijia Tao

Robotics Engineering:

Richard Theodore Eberheim

Paul Solomon Gold Raynes

Minor: Interactive Media and Game
Development

Date: October 13, 2017

To: WPI Faculty

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

Re: Motion to approve the October 2017 graduate student graduation list

Motion: The Office of the Registrar reports that the following candidates have, as of October 5, 2017, completed all of the requirements for the degree designated in the department or program indicated and are eligible to receive that degree. Therefore, as Chair of the Committee on Graduate Studies and Research, I move that these students be approved for October 6, 2017 graduation.

Doctor of Philosophy

Computer Science:

Qian He
Douglas Arthur Selent

Electrical and Computer Engineering:

Fardad Askarzadeh
Yarkin Doroz
Mostafa El Gamal
Bingwen Zhang

Materials Science and Engineering:

Yangzi Xu
Lei Zhang

Mechanical Engineering:

Lei Yang

Robotics Engineering:

Ming Luo
Calder Neff Phillips-Grafflin

Master of Business Administration

Bryant William Bertrand
Christopher John Biehl
Yi Dan Chen
Robert Hopewell Darneille
Kyle Dedmon
Darek Dziubinski
Robert Joseph Felice, Jr.
Jose Antonio Figueroa Serra
Xhorxhi Gjoka

Master of Business Administration cont:

Patrick William Hannah
Jose Apolinar Hernandez
Chetan Kaur
Muzammil Ali Muhammad
Carlos Manuel Pinero Pabon
Walter John Swenton
Peter Anthony Tousignant
Amanda Nicole Varricchio
Hailing Wu

Master of Engineering

Power Systems Engineering:

Matthew Fong Leong
Abhishek Jayant Singh

Master of Mathematics for Educators

Kathryn Anne Larrivee

Master of Science

Applied Mathematics:

Kathleen Rose Kay
Hong Yan

Applied Statistics:

Shanshan Zhou

Bioinformatics and Computational

Biology:

Yifan Zhao

Biomedical Engineering:

Kaitlyn Amie-Elizabeth Marengo

Bioscience Administration:

Tammy M. Adams
Mosaab Alsaray
Jeffrey Anderson
Bem Roy Atsma
Jaimie Marie Capaldo
Rebecca Rose Cooper
Marissa Ann Freda
Theron Christopher Harpole
Yana Kravets
Matthew David Leary
Elise Yasuko Levi
Allyson Lee Masci
Wendi L. Mendoza
Stella Milgrom
Aesha Patel
Carolyn Pelletier
Richard John Smart II
Jessye Dylan Smith
Pamela Schein Weinstein

Chemical Engineering:

Brendan James McKeogh

Computer Science:

Kennedy Tran
Alexander Wesley Witt

Data Science:

Sounthar Manickavasagam

Electrical and Computer Engineering:

Alexander Robert Arnold
David Austin Breakfield
Ian Matthew Costanzo
Mohammad Farmani
Parker Brady Karaus
David P. LaPlante
Sokol Lushllari
Kelsey Bekr McGlashan
Elliot H. Mednick
Long Hoang Nguyen
Benjamin Robert Payeur

Environmental Engineering:

Samantha Chase Ackerly

Fire Protection Engineering:

David Anthony Black
Julia A. MacLeod
James Lawrence Taylor

Management:

Laura Danielle Aurilio
Sina Bagheri
Georges N. Chahwan
Mario Miele

Manufacturing Engineering:

Steven Alan Jewell
Miroslaw Popielarczyk

Marketing and Innovation:

Yuran Hu

Mechanical Engineering:

Christopher Earle Beauchemin
Brad Gimbutis
Nandakumar Radhakrishnan Iyer

Operations Analytics and Management:

Zimo Song

Physics:

Hongji Yu

Power Systems Management:

Magaly Barajas-Roman
Nicolae Dumitriu
Tounkara Mustapha Fofana
Scott Alan Schlef
Benjamin Mayer Stocks

Robotics Engineering:

Donald Leo Bourque
Andres Patricio Cabrera Flor
Shanmuga Perumal Harikumar
Harikrishnan Lakshmanan
Changshuo Li

Robotics Engineering cont.:

Ramkumar Natarajan
Richard Matthew Rafferty
Siddharthan Perunduraj Rajasekaran
Sri Ramana Sekharan
Ned Mincy Shelton II
Srishti Srivastava
Vishnu Sudheer Menon
Weijia Tao

System Dynamics:

Robert Edward Payne

Systems Engineering:

Trisa T. Augustine
Rachel Bijur
Heather Jillson Blease
Alex C. Brown
James Peter Chasse, Jr.
Rebecca Renee Dunnigan
Matthew Ryan Klompass
Adrian Laboy
Jonathan F. Lemoine
Stephen Pereira Lima
Jefry Zeziuhlo Lopes
Spencer Patrick Mitchell
David Morales
Matthew Francis Murphy
Derrick Max Obara
Michael John Piccirillo
Steven Douglas Porter
Bradford Douglas Powers
Erica Prevost
Jeffrey Michael Pruden
Raj Gautam Ranade
Gurpreet Singh
Chad Isaac Walker

Date: October 13, 2017
To: WPI Faculty
From: Committee on Academic Policy (Prof. Humi, Chair)
Committee on Graduate Studies and research (Prof. Troy, Chair)
Re: Motion to use a fully online process for WPI Student Course Evaluations

Motion: The Committee on Academic Policy and the Committee of Graduate Studies and Research recommend, and we move that the WPI Faculty approve the use of a *fully online process* for obtaining student feedback in WPI courses. This process, if approved, will use the *existing* WPI Student Course Report evaluation form and the *existing* rules governing the availability and use of the data collected from that form.

Rationale:

The Faculty voted in December 2012 to give the Committee on Academic Policy (CAP) oversight on future changes to the formal evaluation process by which students give feedback in WPI courses. That motion stated;

*The Committee on Academic Policy recommends and I move that the WPI faculty give the Committee on Academic Policy (CAP) oversight for future changes to; 1) the formal evaluation process by which students give feedback in WPI courses, 2) the WPI Student Course Report evaluation form, and 3) the rules governing the availability and use of the data collected from the WPI Student Course Report form. **Any changes to the course evaluation process, form, or rules will require faculty approval.***

The current motion changes only the evaluation process, it makes no change to the existing WPI Student Course Report evaluation form, or rules governing the availability and use of the data collected from that form.

CAP proposes use of a fully online process for obtaining student feedback in WPI courses for the following reasons:

1. An online system is more environmentally sustainable and will eliminate thousands of pages of paper waste each year.
2. The collection, scanning and distribution of students' reports, which are submitted on paper, is labor intensive and time consuming. It requires a special expensive scanner that is prone to malfunction.
3. Most colleges in the nation have moved to electronic collection of these forms. Only 2 AITU institutions are still using paper evaluations.
4. The student representatives from SGA on CAP conveyed that WPI students are strongly in favor of an online course report.
5. While the questions on the WPI Student Course Report evaluation form remain the same, there will be added flexibility to include new questions at the request of the instructor.

A pilot online process for students to give feedback in WPI courses has been conducted since the 2015-2016 academic year. In the pilot, instructors can volunteer to have students fill out the WPI Student Course Report evaluation form online, or use the standard paper forms in class. Consistent with data from the previous year, averages for Q1, Q2 and Q9 on the online student course reports in 2016-2017 were slightly lower (by .2 to .4 pts.) than the averages on paper student course reports. Online student

course report response rates (47-48%) were also lower than paper student course report response rates (76-78%). About 22% of student surveys were filled out online in 2016-2017.

Provost Bursten has created the Task Force for Improvement of Student Course Reports in a September 15, 2017 memo to faculty and students. As part of its charge the task force will address any concerns that arise from moving to a fully online process, while also considering overall “improvements to our collection and use of student feedback to improve teaching at WPI”. The task force will make recommendations to CAP and CGSR by the end of D term 2018.

Required Resources: No new resources are required for implementation.

Date: October 13, 2017
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. K. Troy, Chair)
Re: Motion to modify the guidelines for financial assistance to Teaching and Research Assistants, Graduate Fellows, and Graduate Assistants

Motion: The Committee on Graduate Studies and research recommends and I move that the guidelines for financial assistance to Teaching and Research Assistants, and Graduate Fellows, and Graduate Assistants described in the Financial Assistance section of the Graduate Catalog be modified as described below.

Description of the Proposed Modifications

Current First paragraph of the Financial Assistance section of Graduate Catalog (p. 14):

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.

(Other paragraphs follow.)

Proposed Revised Text:

(with text deleted from the version sent out on Oct. 6 denoted by ~~strike-throughs~~ and text added to that version denoted in **underlined bold**):

(The following proposed text will replace the entire section.)

Financial assistance to support graduate students is available in the form of teaching assistantships, research assistantships, other graduate 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. Fellowships ~~do not carry specific responsibilities~~ **carry the specific expectations as defined in the notice of award**, and are used to support the student **to focus on research** in their area of study.

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. The expected responsibilities of Teaching Assistants are to support courses as defined by the supporting department or program. 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. The expected responsibilities of Research Assistants are to support research activities as defined by the supporting faculty member.

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.

Graduate Assistants are students that are not otherwise supported as full-time Research or Teaching Assistants or Fellows. There is no implied long-term commitment. These students typically receive hourly or fixed stipends and/or partial tuition support for a specific activity defined by a sponsor. The expected responsibilities of Graduate Assistants are typically to support research activities as defined by the sponsor. This classification is intended to provide a means for providing support to graduate students who would otherwise not receive assistantships, typically self-funded Master's students.

Rationale:

The updated text is intended to clarify the different funding options available to graduate students. Graduate students can often be confused about the type of funding they are being awarded, the duties required, and whether or not it is renewable. The updated text intends to ensure that full-time funded PhD students can maintain a minimum level of funding while they are maintaining satisfactory progress. For example, if someone is brought to WPI as a PhD student TA, they should be assured that they will continue to be funded in some way as long as they are meeting expectations. On the other hand, an additional funding category was added that would give faculty more flexibility to hire a student on a research project for a short period of time, or at less than full support. This category would primarily be used for Master's students or could be used for PhD students who do not need full support.

Implementation Date: 2018-2019 academic year

Resources needed: No new resources

Appendix: Consent Agenda Motions

Date: October 13, 2017

To: WPI Faculty

From: Committee on Academic Operations (Prof. Heineman, Chair)

Re: Motion to modify distribution requirements for Psychological Science Major

Motion: On behalf of the SSPS Department the Committee on Academic Operation recommends and I move that the distribution requirements for the Psychological Science major be modified as described below.

Description of Proposed Changes:

Text to be removed is ~~crossed-out~~. Text to be added is underlined.

Psychological Science Requirements	Minimum Units
1. Psychological Science (Note 1)	3
2. Psych Science and/or Related Courses (Note 2)	4 <u>4/3</u>
3. Other Social Science (Note 3)	1
4. Basic Science, CS, and/or Engineering (Note 4)	5/3
5. Mathematics (Note 5)	<u>4/3</u> 1
6. Electives (Note 6)	1
7. MQP	1

Notes:

1. Must include introductory psychology, social psychology, cognitive psychology, and ~~research methods~~ experimental design
2. Related courses must be chosen from a list of psychology-related courses from other departments ~~maintained by the Psychology Program Review Committee~~ listed in the undergraduate catalog section for the Psychological Science major
3. May include no more than two courses at the 1000-level
4. Must include 1/3 unit of biology. Must include 1/3 unit of computer science (except CS 2022 and CS 3043)
5. Must include 2/3 units of calculus and ~~2/3~~ 1/3 unit of statistics
6. The 1 unit of electives must be approved by the ~~Psychology Program Review Committee~~ Director of the Psychological Science Undergraduate Program

List of psychology-related courses from other departments:

BB 2050	Animal Behavior
BB 2920	Genetics
BB 3080	Neurobiology
BB 3101	Human Anatomy & Physiology: Movement and Communication
BB 3102	Human Anatomy & Physiology: Transport and Maintenance
BB 3620	Developmental Biology
BME 2211	Biomedical Data Analysis
BME 3111	Physiology and Engineering
BME 3300	Biomedical Engineering Design
BUS 1010	Leadership Practice

BUS 2080	Data Analysis for Decision Making
BUS 4030	Achieving Strategic Effectiveness
CS 3041	Human-Computer Interaction
CS 3043	Social Implications of Information Processing
CS 4341	Introduction to Artificial Intelligence
CS 4445	Data Mining and Knowledge Discovery in Databases
EN 1257	Introduction to African American Literature and Culture
EN 2225	The Literature of Sin
EN 2251	Moral Issues in the Modern Novel
HU 1412	Introduction to Asia
HU 2340	Popular Culture and Social Change in Asia
HU 2441	African History and Culture
INTL 1100	Introduction to International and Global Studies
PY 2711	Philosophical Theories of Knowledge and Reality
PY 2716	Philosophies of Difference
PY 2718	Freedom and Existence
RE 2721	Religion and Culture
RE 2722	Questions of Evil and Good
ID 2050	Social Science Research for the IQP
IMGD 2000	Social Issues in Interactive Media and Games
MA 2612	Applied Statistics II
MA 2621	Probability for Applications or MA2631: Probability
MA 3631	Mathematical Statistics
DS 3001	Foundations of Data Science

Rationale:

We would like to modify the Mathematics Requirement by decreasing it from 4/3 to 3/3 (or 1 unit). More specifically, we are reducing the Statistics requirement (see Note 5) from 2/3 to 1/3 unit. The current Mathematics requirement was put into place prior to the offering of a) MA 2610: Applied Statistics for the Life Sciences and b) PSY 3500: Experimental Design and Analysis. Many Psychological Science majors take MA 2610 because it fits better with Psychological Science and/or they are double majoring in a discipline that requires MA 2610. In addition, Psychological Science majors have reported that the transition from MA 2610 to MA 2612: Applied Statistics II has been difficult as it is assumed students have taken MA2611: Applied Statistics I, not MA2610. In addition, other majors (e.g., BIO and BME) require one statistics course (MA 2610). Consequently, we have found that requiring 2 stats courses plus an experimental design course has been harder for those wanting to double major to complete the degree requirements. Moreover, PSY 3500: Experimental Design and Analysis is a better fit for our majors and double majors and a nice transition from MA 2610. All related Statistics courses (e.g., MA 2612) will be added as approved Psych Science and/or Related courses. Thus, a major or double major could still take MA 2612 or another Statistics course and have it count for the Psych Science and/or Related Course distribution requirement.

We would also like to increase the Psych Science and/or Related Courses Requirement by 1/3 credit—changing it from 3/3 (1 Unit) to 4/3. This change will benefit our majors and double majors by allowing them to take one additional course in Psychological Science or an additional course that is approved as a related course from a different discipline. As mentioned above, majors and double majors could still take MA 2612 as it will be an approved Psych Science and/or Related Course.

This change should not significantly change MA 2610 class sizes because most Psychological Science majors are already taking MA 2610. It may reduce the number of students taking MA 2612, but not by a significant amount (a few students a year, but majors and double majors could still take MA 2612 for the Psych Science and/or Related Requirement). This change should not significantly influence class sizes for Psychological Science or Related courses either.

We now list in the undergraduate catalog those “psychology-related courses from other departments” which makes it easier for students to plan their course of study. It also makes it easier for WPI faculty outside of the SSPS department to advise students.

Implementation Date: Spring 2018

Date: October 13, 2017

To: WPI Faculty

From: Committee on Academic Operations (Prof. Heineman, Chair)

Re: Motion to add a Psychobiology concentration to the Psychological Science Major

Date: 8/11/2017

Motion: On behalf of the SSPS Department, the Committee on Academic Operations recommends and I move, that a concentration in Psychobiology be added as described below.

Description of the the Proposed Concentration

Concentration Guidelines:

1. Psychological Science Majors who are interested in the biological aspects of psychology can choose to complete a concentration in Psychobiology. To complete the concentration, students must complete 2 units of coursework from the approved list of courses related to psychobiology.
2. All students completing this concentration will need to complete an MQP that relates to psychobiology.
3. 2/3 units should come from the Psychological Science and may include (see Note 1):
 - PSY 1404: Developmental Psychology
 - PSY 1412: Mental Health
 - PSY 2408: Health Psychology
 - PSY 2502: Psychophysiology
 - a. Note 1: Only one course in this subset can be at the 1000-level
4. 4/3 units should come from Biology & Biotechnology and may include (see Note 2):
 - BB 1025: Human Biology
 - BB 1035: Intro to Biotechnology
 - BB 2003: Fundamentals of Microbiology
 - BB 2050: Animal Behavior
 - BB 2550: Cell Biology
 - BB 2903: Anatomy & Physiology (1/6)
 - BB 2904: Ecology, Environment, and Animal Behavior (1/6)
 - BB 2920: Genetics
 - BB 2950: Molecular Biology
 - BB 3040: Experimental Design and Data Analysis
 - BB 3080: Neurobiology
 - BB 3101: Human Anatomy & Physiology: Movement and Communication
 - BB 3102: Human Anatomy & Physiology: Transport and Maintenance

- BB 2511: Nerve and Muscle Physiology
- BB 3514: Circulatory and Respiratory Physiology
- BB 3518: Molecular Biology
- BB 3620: Developmental Biology
- a. Note 2: Only one course in this subset can be at the 1000-level

Impact on Distribution Requirements and Other Courses:

Psychological Science Requirements	Minimum Units
1. Psychological Science (Note 1)	3
2. Psych Science and/or Related Courses (Note 2)	4/3
3. Other Social Science (Note 3)	1
4. Basic Science, CS, and/or Engineering (Note 4)	5/3
5. Mathematics (Note 5)	1
6. Electives (Note 6)	1
7. MQP	1

Notes:

1. Must include introductory psychology, social psychology, cognitive psychology, and experimental design
2. Related courses must be chosen from a list of psychology-related courses from other departments listed in the undergraduate catalog section for the Psychological Science major
3. May include no more than two courses at the 1000-level
4. Must include 1/3 unit of biology. Must include 1/3 unit of computer science (except CS 2022 and CS 3043)
5. Must include 2/3 units of calculus and 1/3 unit of statistics
6. The 1 unit of electives must be approved by the Director of the Psychological Science Undergraduate Program

This concentration fits within the Distribution Requirements for the Psychological Science Major. The concentration's 2/3 Psychological Science requirement will fit under the Psychological Science 3 unit (9/3) distribution requirement. The concentration's 4/3 Biology & Biotechnology requirement will fit under the 1 unit (3/3) Psych Science and Related Courses requirement and the one unit (3/3) Basic Science Requirement (1/3 needs to be a Biology already).

Rationale:

We propose to add a concentration in Psychobiology to the Psychological Science Major. In recent years, we have seen an increase in the number of students interested in Psychology and Biology. In addition, we have hired a Health Psychologist who focuses in psychophysiology and biological mechanisms. In 2017, we graduated one PSY/BIO double major and two interdisciplinary majors who created a psychobiology/biopsychology major. Thus, this concentration will help better meet the

demand and needs of students interested in the relationship between psychology and biology.

Resource Needs: This concentration will not add any additional resources to the Psychological Science or Biology & Biotechnology programs. All courses are already taught, and students interested in Psychology and Biology are already taking these types of courses.

Implementation Date: Spring 2018

Date: October 13, 2017

To: WPI Faculty

From: Committee on Academic Operations (Prof. Heineman, Chair)

Re: Motion to add a three-course sequence of Research in Psychological Science

Motion: On behalf of the SSPS Department, the Committee on Academic Operation recommends and I move that a three-course Research in Psychological Science sequence (PSY 2900: Introduction to Research in Psychological Science; PSY 3900: Research in Psychological Science; and PSY 4900: Advanced Research in Psychological Science) as described below, be added.

Proposed Course Descriptions:

PSY 2900: Introduction to Research in Psychological Science

ISU (Credits are variable from 1/6-1/3 unit)

This course provides an opportunity for students learn how to conduct psychological research in a research laboratory in psychological sciences. Recommended background: a base understanding of Psychological Science (PSY 1400, PSY 1401, PSY 1402, or equivalent). Permission of the instructor is necessary to register. This course may be repeated for credit.

PSY 3900: Research in Psychological Science

ISU (Credits are variable from 1/6-1/3 unit)

This course provides an opportunity for students to conduct psychological research in a research laboratory in psychological sciences. Recommended background: a fundamental understanding of psychological science research (PSY 2900, PSY 3500, or equivalent). Permission of the instructor is necessary to register. This course may be repeated for credit.

PSY 4900: Advanced Research in Psychological Science

ISU (Credits are variable from 1/6-1/3 unit)

This course provides an opportunity for students to conduct advanced psychological research in a research laboratory in psychological sciences. Recommended background: an advanced understanding of psychological science research (PSY 3500, PSY 3900, or equivalent). Permission of the instructor is necessary to register. This course may be repeated for credit.

Anticipated Instructors: Professors Skorinko, O'Brien, Ottmar, Arroyo, and Doyle. Students will be able to select who the faculty member that they will conduct the research under when registering for the course. Instructors will need to approve the registration and amount of credit.

Rationale:

This series of courses will formalize current practices within the Psychological Science Undergraduate Program and aligns with peer institutions undergraduate course offerings in Psychological Science. It will also provide a more visible and concrete way for students of all backgrounds to get involved in psychological science research for credit. By offering several levels (introductory to advanced) of this course, it will enable students of all backgrounds and

interests to get involved in psychological science research. We already encourage students of all backgrounds to work in our research labs. Professors Skorinko and O'Brien typically work with 5-10 undergraduates in research a term. Professors Arroyo and Ottmar also typically work with several undergraduates in their research a term. Furthermore, this will provide a more concrete opportunity for majors and minors to get involved with psychological science research and can serve as a capstone experience for psychological science minors. Currently, students approach a faculty member to design a capstone experience, and most conduct research with a faculty member. This would formalize this process in an easier and more visible way. It will make the research opportunities in Psychological Science more visible to students. Students will work with a specific faculty member on a specific research project. Students and Faculty will be able to choose the amount of credits they will take as each research project requires different amounts of time and effort. This also reflects current practices with Research ISPs. Finally, these course offerings will reduce the need for a department head to sign off on multiple repeated ISPs (after the recently approved ISP policy change for ISPs offered more than twice) since Research ISPs are offered very frequently each academic year in Psychological Science with the same name (e.g., Social Psychology Research).

Impact on Distribution Requirements and Other Courses: This will provide an additional course for Psychology majors and minors (and other students) to take.

Resource Needs: These courses does not require new resources as it formalizes current practices in the Psychological Science undergraduate program.

Registrar Approval: Sarah Miles, Registrar, has reviewed this motion and approved it. She also checked the course numbers to ensure they are new. The registrar's office will create an add/drop form for this course that will allow the instructor to indicate their approval and the amount of credit.

Implementation Date: Spring 2018

Date: October 13, 2017

To: WPI Faculty

From: Committee on Academic Operations (Prof. Heineman, Chair)

Re: Motion to add four Special Topics courses in Psychological Science

Motion: On behalf of the SSPS Department, the Committee on Academic Operation recommends and I move, that four Special Topics courses in Psychological Science (PSY 1800: Special Topics in Psychological Science; PSY 2800: Special Topics in Psychological Science; PSY 3800: Special Topics in Psychological Science; and PSY 4800: Special Topics in Psychological Science) as described below, be added.

Proposed Course Descriptions:

PSY 1800: Special Topics in Psychological Science

Cat II (Credits will be assigned by the instructor ranging from 1/6-1/3 unit)

This course provides an opportunity for students with little to no background in psychological science to learn about a special topic within Psychological Science. This course may be repeated for different topics.

PSY 2800: Special Topics in Psychological Science

Cat II (Credits will be assigned by the instructor ranging from 1/6-1/3 unit)

This course provides an opportunity for students with some background and interest in psychological science to learn about a special topic within Psychological Science. Recommended background: An introductory background in psychological science (PSY 1400, PSY1401, PSY 1402, or equivalent). This course may be repeated for different topics.

PSY 3800: Special Topics in Psychological Science

Cat II (Credits will be assigned by the instructor ranging from 1/6-1/3 unit)

This course provides an opportunity for students with a solid background and interest in psychological science to learn about a special topic within Psychological Science. Recommended background: one 2000-level Psychological Science courses (or equivalent). This course may be repeated for different topics.

PSY 4800: Special Topics in Psychological Science

Cat II (Credits will be assigned by the instructor ranging from 1/6-1/3 unit)

This course provides an opportunity for students with a strong background and interest in psychological science to learn about a special topic within Psychological Science. Recommended background: two 2000 and/or 3000 level Psychological Science courses. This course may be repeated for different topics.

**Note: Specific course description will be added to the online course listing once the topic is decided and course is offered.

Anticipated Instructor: Professors Skorinko, O'Brien, Ottmar, Arroyo, Doyle, and other interested faculty.

Rationale:

These courses formalize current practices in the Psychological Science undergraduate program—as faculty currently offer ISPs in special topics. Adding these courses will provide a formalized opportunity for faculty to teach topics that they are interested in, have expertise in, and that students will be interested in. By offering Special Topics at varying levels (introductory-advanced), we should see students from a variety of disciplines on-campus enroll in different leveled Special Topics courses. These course offerings will also provide us the opportunity to get more students interested in psychological science at varying levels. Furthermore, upper-level Special Topics courses will provide a much needed opportunity for psychological science majors and minors to get a seminar-like experience in an advanced topic within Psychological Science. This idea to formalize our current ISP practices into Special Topics courses emerged as in the 2016-2017 academic year we were able to offer two class-based Independent Studies (ISPs): one on Jungian Psychology and one on The Psychology of Comic Book Heroes and Villains. We saw exceptional interest in those ISPs and would like to be able to offer special topics more easily and more visibly in the future. Furthermore, this will help reduce the need for a department head to sign off on multiple repeated ISPs (after the recently approved ISP policy change for ISPs offered more than twice). Other departments on campus have Special Topics courses which this is modeled after (e.g., Mathematics offers MA 4891: Topics in Mathematics level). Moreover, this is common practice in other Psychological Science Undergraduate Programs.

Impact on Distribution Requirements and Other Courses: This will provide an additional course for students off all backgrounds to take interesting courses in Psychological Sciences and will provide additional opportunities for Psychology majors and minors to take.

Resource Needs: These course does not require new resources as it relies on current faculty in SSPS and current practices within the department. Faculty load will be carefully considered when determining when a Special Topics courses is offered and how many are offered an academic year. We have confirmation from the registrar's office that they will support this type of course and we will work with them to get updated course description information to them when the course will be offered.

Registrar Approval: Sarah Miles, Registrar, has reviewed this motion and approved it. She also checked the course numbers to ensure they are new.

Implementation Date: Spring 2018.

Date: October 13, 2017

To: WPI Faculty

From: Committee on Academic Operations (Prof. Heineman, Chair)

Re: Motion to add *BB 3527 Molecular Biology and Genetic Engineering: Approaches and Applications*

Motion: On behalf of the Department of Biology and Biotechnology, the Committee on Academic Operations recommends and I move that the course: *BB 3527 Molecular Biology and Genetic Engineering: Approaches and Applications*, as described below, be added.

Proposed Course Description:

BB 3527, Molecular Biology and Genetic Engineering: Approaches and Applications
Category I (1/3 unit)

In this laboratory based course, students will learn to use current techniques in molecular and genetic engineering to address authentic research questions. Students will design and execute experiments to assess hypotheses, and evaluate data relative to those hypotheses. Specific approaches may include the generation of novel plasmids, genes, and cells, designed to specifically address contemporary problems in biology and biomedical science. In each offering, the problem addressed will be selected from and the results contribute to current faculty research initiatives.

Recommended background: Working knowledge of the principles of molecular biology (BB 2950 or BB 2920 or equivalent) and cell biology (BB 2550 or equivalent), as well as relevant biology laboratory experience (BB 2905, BB 2915, or BB 2916).

Students may not receive credit for both BB 356X and BB 3527.

Contact: Jill Rulfs

Preferred term: D

Expected enrollment: ≤ 20

Course type: Laboratory

Intended audience: upper level students in the life sciences

Anticipated Instructor: Louis Roberts (Professor Roberts is a non-tenure track teaching professor. We have three NTTs who together are responsible for our laboratory teaching. The schedules of all three have been adjusted to accommodate this course with no undue load on any one of the three.

Course Learning Outcomes: Students who complete this course will be able to:

1. demonstrate mastery of the quantitative and procedural skills related to molecular biology.
2. design appropriate experiments using contemporary approaches and techniques in molecular biology and genetic engineering.

3. properly collect, record, and analyze experimental data to assess the validity of a scientific hypothesis;
4. present findings clearly in written and verbal formats while adhering to the standards, style, and intellectual honesty expected of life scientists;
5. function effectively, safely, and collaboratively as part of a team of scientists.

Rationale:

The rationale for this course offering lies in the national call to transform undergraduate science teaching. Among the recommendations included in the President's Council of Advisors on Science and Technology (PCAST) report, *Engage to Excel*, and in the AAAS/NSF report, *Vision and Change in Undergraduate Biology Education*, is replacing standard laboratory courses with discovery-based research courses. Towards this goal, this course represents an additional step in revamping our undergraduate laboratory curriculum (first steps involved CAO approval of BB2915, *Searching for Solutions in Soil*, BB2916, *Phage Hunters: The Quest*, and BB3526, *Phage Hunters: The Analysis*). This laboratory course will provide the opportunity for students to utilize contemporary molecular biology and genetic engineering approaches to address authentic research problems posed by BBT faculty. This course will also serve as a model for upper level 1/3 unit laboratories (as opposed to all current 3500 BBT lab courses which are worth 1/6 unit of credit). This credit load will allow for and be more reflective of the time and effort required for a more comprehensive exploration of the scientific research method by the students. This course was previously offered as an experimental course, BB 356X in D17 and is scheduled to be taught again in D18.

Resource Needs: No new resources are required. The course will be taught in one of the Goddard Hall laboratory rooms where the only other courses taught are Biology & Biotechnology courses. We have reviewed the room use and devised a schedule to accommodate this course with no additional space resources required.

Assessment: The course will be assessed by the distribution of student evaluations with additional course specific questions.

Anticipated impact: This course would fulfill a laboratory distribution requirement for BBT or biochemistry majors. Any student with a working knowledge of the principles of molecular and cell biology and/or genetics (notably CBC and BCB majors) would have access to this course.

Implementation Date: Academic Year 2018-2019

Additional Information:

Feedback from experimental offering, D17:

WPI course evaluation data:

Q1	4.73
Q2	4.73
Q9	4.55

Q26A \geq 7hrs/wk: 100% of responses
Q26B 1-5 hrs/wk: 64% of responses
6-10 hrs/wk: 27% of responses
11-15 hrs/wk: 9% of responses

Additional student feedback was collected using a Qualtrics survey designed to assess learning gains and student attitudes (See instructor reflections below). The results of that survey are attached.

Instructor reflections

BB356X ran for the first time in D term, 2017. Students successfully met all five stated learning outcomes by the conclusion of the course. Most impressively the students were able to ramp up very quickly and finalize the design of their research project in the first two class meetings.

To fully complete DNA assembly, sequence analysis, and integrate the students' constructs into the host cell, three weeks was required. Given approximately six total weeks of experimentation is available, downstream analysis of expression was confined to three weeks. The final week was utilized to refine their analyses, catalog findings, and design, print, and present their research posters. Experimentally, the students were able to build their constructs, design and implement their chosen experiment, and conduct downstream analysis of their results. In the time allotted, extension activities were not successful. The free web-based platform Benchling was successfully utilized by students to integrate their notes, protocols, images, and analyses in a scientifically acceptable format. The logical progression of designing and undertaking experiments, analyzing data, and reporting findings in a seven week timeframe was successfully completed by the students, validating a similar schedule for future offerings.

Assessments were administered throughout and at the conclusion of the course. The Morgan Center Midterm Course Feedback was done to assess how the students felt the lab was functioning while adjustments could still be made. Through this assessment students reported a high satisfaction level with the course after three weeks (particularly with the importance of their individual project to the research enterprise of Dr. Shell's laboratory and the use of the integrated electronic lab organization software). Students did state the pace was very brisk and more discussion of concepts behind the procedures would be of benefit. To this end, a weekly "lab group meeting" was instituted where the students, instructor, and TA set aside a 45 minute block to discuss the concepts. Future offerings will incorporate this weekly meeting throughout the term.

At the conclusion of the course, WPI student evaluations, along with selected questions from validated surveys, Laboratory Course Assessment (LCAS) and the Course-based Undergraduate Research Experience (CURE), were administered. Course quality (Q1 = 4.73), instructor's teaching effectiveness (Q2 = 4.73), and the amount learned by the students (Q9 = 4.55) were all very favorably assessed. All students reported at least 7h/week was spent in class (Q26a); a majority of students reported 1-5h/week was

spent on the class outside of scheduled time (Q26b). It is critical to note that all students averaged 11+ hours per week in the laboratory (midterm course assessment and teaching staff observation). Given the concurrent nature of experimentation and data analysis, the course intentionally was designed to maximize time spent in the laboratory space. Thus, the relatively low amount of time spent outside the classroom was offset by the time spent within the laboratory. The LCAS and CURE survey results reflect this intensive research-based lab course successfully met its learning outcomes for the students, who felt more invested in the experiments, gained a clear understanding of how theory and knowledge are integrated into design of their projects, and emerged confident to face the challenges of original scientific research in the future.

For the next offering in D term 2018, the students will be introduced to their specific project and concurrently be given one review article and one primary research article to familiarize them with the concepts underpinning the systems they will be using, as well as their applications in modern biology. As indicated by the assessments administered in the first offering, an earlier introduction to these fundamental concepts should greatly benefit learning. Thus, students will be better positioned to identify the value in their experimental designs and outcomes at an earlier stage of the class, and become familiarized with peer-reviewed scientific literature.

Date: October 13, 2017
To: WPI Faculty
From: Committee on Academic Operations (Prof. Heineman, Chair)
Re: Motion to update the course description of CH4330 Organic Synthesis

Motion: On behalf of the Department of Chemistry and Biochemistry, the Committee on Academic operations recommends and I move that the description for *CH4330: Organic Synthesis* be updated, as described below.

Current Course description and course offering schedule:

CH4330– Organic Synthesis

A discussion of selected modern synthetic methods including additions, condensations and cyclizations. Emphasis is placed on the logic and strategy of organic synthesis. (Recommended background: CH2310, CH2320, CH2330 or the equivalent.) This course will be offered in 2012-13 and in alternate years thereafter.

Proposed course description and course offering:

CH4330–Organic Synthesis

Modern synthetic methods as applied to the construction of societally relevant target molecules will be the focus of this course. Discussions may emphasize the logic and strategy in synthetic approaches toward active pharmaceutical ingredients, agrochemicals, fine chemicals, materials, and other targets of interest. The analysis of current examples from the primary literature will draw attention to the most state-of-the-art synthetic tactics. Recommended for graduate students and undergraduates who have a basic understanding of the principles governing organic reactions, such as those covered in CH2310, CH2320, and CH2330. This course will be offered in 2018-19 and alternate years thereafter.

Schedule (unchanged): B Term. MT-RF 8-8:50a.

Rationale:

This is an update to the description and content of CH4330.

Modern synthetic methods are constantly evolving as new discoveries are made in the field. The description and content of CH4330 are being modernized to reflect that the course content will cover up-to-date synthetic methods and include examples found in the primary literature.

Furthermore, the class will be taught from an applied perspective, so that students can gain a better appreciation of organic synthesis as an enabling tool for society. Ideally, the new course content will appeal to a wide range of students with interests in materials science, drug development, and the chemical industry in general.

Impacts on students: A positive impact on both graduate and undergraduate students as the course description and content will reflect the current state of the art in the field of organic synthesis and appeal to a larger audience.

Resource Needs: All resources needed to deliver the redesigned sequence are currently available, including the assigned classrooms, laboratory space, instructors, and any support via the ATC, Registrar, and library staff.

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

Date: October 13, 2017

To: WPI Faculty

From: Committee on Academic Operations (Prof. Heineman, Chair)

Re: Motion to add WR 3300 Cross-Cultural Communication

Motion: On behalf of the Department of Humanities and Arts, the Committee on Academic Operation recommends and I move that WR3300 Cross-Cultural Communication as described below, be added.

Proposed Course Description:

WR 3300 Cross-Cultural Communication, Cat II.

This course will examine how people from differing cultural backgrounds communicate, in similar and different ways among themselves, and how they endeavor to communicate across cultures. Students will develop a personal and theoretical understanding of the cultural origin of people's values, ideologies, habits, idiosyncrasies, and how they affect communication across cultural, racial, ethnic and gender lines. Through observing, studying and experiencing incidents of cross-cultural communication, they will begin to examine and develop skills that are necessary for effective understanding and for successful communication among majority and minority groups.

Note: Students who have taken WR330X may not receive credit for this course. This course will be offered in 2018-19, and in alternate years thereafter.

Anticipated Instructor: Prof. Esther Boucher-Yip and Prof. Jennifer deWinter as an alternate

Rationale:

The purpose of this course is to introduce students to inter/cross-cultural communication concepts and the role of communication in human interaction. The course is designed for students who are planning inter/cross-cultural experiences through work, study, or travel, for international students who are studying in the United States, or for students who are just interested in learning more about their own culture and the cultures of others. Students will examine a broad view of "culture", which encompasses geographic region, ethnicity, age, socioeconomic class, and gender. Students will study the relationship between language and culture by investigating aspects of language use that vary by culture.

With the increasing number of students travelling abroad for IQP and MQP, the steady growth of international student enrollment and WPI's emphasis on developing global competency this course will help students develop skills that are necessary for effective understanding of cross-cultural communication. This course will also serve as an option for students planning a minor in Chinese Studies and International/Global Studies, and students pursuing the HUA requirement through a language track.

Feedback from course evaluations:

This course was taught as an experimental course in Academic Years 2013 and 2015 during D-terms. A summary of student feedback and outcomes from questions 1, 2, 9 and 26 of course evaluations is presented below for both sections D- 2013 (7 responses) and D-2015 (27 responses):

	D-13	D-15
Q.1	4.29	4.45
Q.2	4.43	4.68
Q.9	4.14	4.22
Q.26		
1-5 hrs	4	14
6-10hrs	2	7
11-15hrs	1	4
16-20hrs		2

Student comments from course evaluations:

“I liked how relatable the material of the class was. I can apply what I learned to many aspects of my studies and life in the future.”

“I liked how relevant the information presented in the class was to day-to-day interactions and business interactions. I felt like the information that was presented will benefit me in my professional life as well as in social interactions.”

“I definitely learned how to interact with other cultures.”

“I loved the course readings from the book. I thought the reading were very interesting and much different from other classes.”

“I really enjoyed the class. I learned a lot about intercultural communication.”

“I really liked this class. It stimulated my interest and the professor had a great schedule for the class that had a good flow and helped me to manage my time and work for the class effectively. The professor is also a great lecturer and professor in general.”

“Well taught, assignments reinforced material, class time was well spent.”

“Helped me learn about so many cultures and being an international student it helped me a lot.”

“It was one of my most valuable classes, even though it didn’t directly relate to my career. I thought I already knew a lot about being culturally competent, but this course

taught me how much I didn't know. With WPI's diverse community, this course should be required."

"It was very educational and I've already used the knowledge I've gained in this course to facilitate better understanding between people of different cultural backgrounds."

Instructor feedback and reflections:

The course was well received when it was taught twice as an experimental course, and students provided positive feedback in the end of term evaluations. The course met the learning objectives as outlined in the experimental offerings. Students commented that the topic and issues presented in class helped them understand the broader concept of culture and how it impacts their daily communication with others. For students who were preparing for IQP abroad, many found that this course gave them a new perspective about communicating in specific cultures. International students, on the other hand, commented that the course helped them understand diversity issues in the United States.

It was interesting to note that many students commented in our informal in-class evaluations that the course had challenged their thinking about inter/cross cultural issues. This could be due to the presentation of case studies and critical incidents that were relatable to students' lives. In addition, the textbook we used provided information, examples, and quizzes that was helpful to solidify the material covered in this course. If this course becomes permanent, I will continue to use the same textbook and supplementary materials to support student learning. Also, more instructional videos to demonstrate scenarios of cross cultural challenges will be used to stimulate discussions. With the new course management system, Canvas, I am able to fully utilize the tools and features available to increase students' work on course activities outside of the scheduled class time. I will utilize Canvas to post practice quizzes, reflection questions, and videos for analysis and discussion online.

We anticipate student interest in this course will increase and the projected enrollment is 20 in each section.

Implementation Date: Implementation date for this action is the 2018-2019 academic year.

Resource Needs: The proposed course will be taught by Prof Boucher-Yip who had taught this course twice as an experimental course. The use of a (small) multimedia classroom will be required. No special software or additional library resources will be needed. **Impact on Distribution Requirements and Other Courses:** The new course will have no impact on current distribution requirements. This course will be a permanent course offering in the Professional Writing Program.

Date: October 13, 2017
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Troy, Chair)
Re: Motion to add CH 543 Organometallic Chemistry

Motion: On behalf of the Department of Chemistry and Biochemistry, the Committee on Graduate Studies and Research recommends and I move to add a new graduate course, *CH543: Organometallic Chemistry and Catalysis*, as described below.

Proposed Course Description:

CH543 Organometallic Chemistry and Catalysis

Organometallic chemistry and catalytic reactions have fundamentally changed the way drugs and polymeric materials are made today. Furthermore, they have enabled the synthesis and application of new electronic materials (e.g. in OLEDs and molecular wires) and materials mimicking natural processes (e.g. self-healing and anti-bacterial coatings). This course will establish principles to understand the reactivity of organometallic compounds of transition and main groups metals. Furthermore, metal-free catalysis will be introduced. Pulling on influences from both inorganic and organic chemistry, the class will provide insight into catalysis approaches that have revolutionized synthetic chemistry, enabling highly efficient, sustainable production of compounds that are used in such different areas as drug discovery, protein analysis, and performance plastics. Case studies will be drawn from the current literature and applications that are widely used in industrial and academic settings and will include work that has led to recent Nobel prizes in the area. Recommended preparation includes the organic chemistry sequence (CH2310, CH2320, and CH2330) and CH3410. The course is recommended for both graduate and advanced undergraduate students. This course will be offered in 2018-2019 and alternate years thereafter.

Schedule: Cat. II. A Term. TR 4-6:30 pm

3 credit course. 5 hours of lecture/week (35 hours total). 3 hours of work per hour of lecture = 15 hours/week outside work (105 hours total). Total of 140 hours of work per term.

Rationale:

This course is a new addition to the curriculum and covers material not offered in any other class at WPI. It has not been taught here before. We wish to introduce it directly into the graduate book, not just offer a special topics course, because we are planning to require it as part of our new graduate curriculum (which we will be submitting to CGSR shortly).

The Chemistry and Biochemistry Department seeks to encourage the intellectual growth of graduate and undergraduate students by offering advanced courses designed to facilitate independent thinking. This class will provide a framework for understanding and evaluating modern synthetic methods that are widely used in industrial and academic contexts. As such, it will provide students with a better understanding of current synthetic chemistry, which will benefit them during their research experiences (e.g. IDPs, MQPs, future/current graduate school research) and future careers relating to chemical and materials R&D.

Impacts on students: A positive impact on both graduate and undergraduate students is expected as the course is a new addition to the curriculum and covers information that is not currently offered in any other course.

Resource Needs: An assigned classroom for ~20 students will be needed. Prof. Marion Emmert will teach this class.

Implementation Date: Implementation date for this action is the 2018-2019 academic year.

Date: October 13, 2017
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Troy, Chair)
Re: Motion to add CH544: Elucidation of Organic Reaction

Motion: On behalf of the Department of Chemistry and Biochemistry, the Committee on Graduate Studies and Research recommends and I move to a new graduate course *CH544: Elucidation of Organic Reaction Mechanisms*.

Proposed Course Description:

CH544: Elucidation of Organic Reaction Mechanisms

In this advanced course, students will develop skill sets to independently understand, explain, and predict reactions of organic molecules. Principles of modern physical organic chemistry, such as bonding, hybridization, molecular orbital theory, non-covalent interactions, stereochemistry, and conformational analysis, will be introduced alongside experimental techniques related to thermodynamics and kinetics to provide scientists with tools to understand existing reaction pathways and study new reactions. The interplay between mechanistic hypotheses and experimental observations will be demonstrated using case studies from the primary literature. Recommended for graduate students and undergraduates who have completed the sequence in organic chemistry (CH2310, CH2320, and CH2330). This course will be offered in 2019-2020 and alternating years thereafter.

Schedule: Cat. II. A Term. TR 4-6:30 pm

3 credit course. 5 hours of lecture/week (35 hours total). 3 hours of work per hour of lecture = 15 hours/week outside work (105 hours total). Total of 140 hours of work per term.

Rationale:

This course is a new course at WPI and it will cover material not offered in any other class at WPI. It has not been taught here before. We wish to introduce it directly into the graduate book, not just offer a special topics course, because we are planning to require it as part of our new graduate curriculum (which we will be submitting to CGSR shortly).

The Chemistry and Biochemistry Department seeks to encourage the intellectual growth of graduate and undergraduate students by offering advanced courses designed to facilitate independent thinking and problem solving. Through the analysis of recent examples out of the primary literature, *Elucidation of Organic Reaction Mechanisms* will demonstrate how to apply fundamental concepts in physical organic chemistry to solve problems in organic synthesis. Beyond advanced chemistry topics, students successfully completing the class will hold a new perspective on the application of analytical tools and experimental tactics to probe chemical reactivity, which will benefit them during their research experiences (e.g. IDPs, MQPs, future graduate school research) and future careers relating to chemical R&D.

Impacts on students: A positive impact on both graduate and undergraduate students is expected as the course is a new addition to the curriculum and covers information that is not currently offered in any other course.

Resource Needs: A classroom for ~20 people will be needed. Prof. Anita Mattson will teach this class.

Implementation Date: Implementation date for this action is the 2019-2020 academic year.