

WORCESTER POLYTECHNIC INSTITUTE

March 11, 2021

To: The WPI Faculty

From: Tanja Dominko, Secretary of the Faculty

The sixth Faculty meeting of the 2020-2021 academic year will be held on **Thursday, March 11th, 2021 at 3:15 pm via ZOOM.**

1. Call to Order
 - Approval of the Agenda
 - Approval of the Consent Agenda and the Minutes from 1-28-21
2. Committee Business
 - COG
Motion: Rename the Mechanical Engineering (ME) Department to Mechanical and Materials Engineering (MME) Department
 - CAP
Motion: Change the policy regarding the overload policy in C and D-term 2021
Motion: Adopt an 8-year pilot of test-blind admissions policy
Motion: Revise Distribution Requirements of IMGD Technology (BS) Major
Motion: Revise Distribution Requirements of IMGD (BA) Major
3. Committee Reports
 - CITP: On the Use of Online Proctoring Services
4. Other Reports
 - COACHE survey of faculty satisfaction
5. President's Report
6. Provost's Report
7. Secretary of the Faculty Closing Remarks
8. New Business
9. Adjournment

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WORCESTER POLYTECHNIC INSTITUTE
Faculty Meeting Minutes
January 28, 2021

Summary:

1. Call to Order
 - Approval of Agenda
 - Approval of the Consent Agenda and Minutes from December 10, 2020
2. SoF Report
3. Committee Business: COG
4. President's Closing Remarks
5. Provost's Closing Remarks
6. Closing Announcements
7. Adjournment

Detail:

1.Call to Order

The fifth Faculty meeting of the 2020-2021 academic year was called to order at 3:15pm via ZOOM by **Prof. Dominko** (BBT). **Secretary of the Faculty Dominko** welcomed everyone and reminded them that the meeting was being recorded. The consent agenda including the minutes from the last faculty meeting were approved.

2. Secretary of the Faculty's Report

Prof. Dominko reminded everyone that the process for conducting faculty meetings is outlined in our Faculty Handbook. It specifies that attendance at the meetings is open to a variety of constituencies on campus. The handbook also specifies that participation in discussions is reserved for faculty members, administration, and students that are part of our faculty governance committees. Another important topic in the handbook is the description of the voting procedure. Prof. Dominko explained that under our current guidelines, voting is reserved for tenure-track and tenured faculty at WPI. Prof. Dominko asked that we all respect these provisions, assuring the integrity of the meeting proceedings. We need to maintain trust and confidence that faculty business is being done appropriately and that it honors provisions of the Faculty Handbook. Today we're going to vote anonymously by using the polling function. Each motion will have two options, so you either approve of the motion, or you oppose the motion. To maintain integrity of the process we will capture identities of participants who are casting votes today without revealing anyone's individual voting preference. If you are on participating on the phone, you will be allowed to cast your vote by texting your vote to Penny Rock at 508-400-0304.

3. Committee Business

COG

Prof. Boudreau (HUA) and **Prof. Richman** (ME) presented the three motions on behalf of COG.

Prof. Boudreau explained that these motions are on establishing a tenure-track for teaching faculty.

Prof. Richman began by explaining the recent history of these motions going back to 2009 when the first efforts were made to improve the status of the TRT faculty. In 2018, Prof. Dominko appointed a Task force on the status of TRT faculty. During the past two year, the Task force engaged broadly with the community to collect feedback on the status, concerns, and recommendations for improving the status of TRT faculty. Among these were all the Deans, all Department Heads, and open meetings with the TRTs themselves. A report of the Task force was presented to the Faculty in November 2019. Since then, faculty governance has been working closely with Provost Soboyejo and included open sessions and focus groups, including TTTs. Task force met with COAP, CTAF, and the WPI chapter of the AAUP. Task force also spoke to Associate VP of Academic Affairs Kris Sullivan and Provost Soboyejo concerning budget and finance matters. The critical part of all these collaborations was working closely with the TRT Council and they have been equal partners. Numerous discussions within COG resulted in motions presented at the November meeting. At that time, President Leshin respectfully asked for additional time with the Board and Prof. Richman stated that this additional time was well spent. He also added that this proposal is an example of how the process can be a part of the solution.

Prof. Richman thanked Prof. Dominko for establishing this task force and also the ten members of the task force. The group was made up of five TRTs and 5 TTTs. Prof. Richman stated that the conversations weren't always easy, but they brought everyone together and were the start of collaboration that continues today. The TRT faculty are strongly in favor of the proposed motions. Prof. Richman emphasized the effort put forward by many members of the community in order to present these motions today.

Prof. Boudreau explained that 52 years ago WPI faculty voted to throw away the curriculum and adopt the WPI plan. This was a big risk and they were facing an existential crisis. We aren't facing a crisis now, but this is an opportunity for us to solve a problem that has been plaguing higher education. Today we are going to vote on three motions that have resulted from our effort to improve the university by improving the status of our TRT colleagues. This is going to do for higher education what our strong tradition of project-based learning is starting to finally do. This is also going to do for us what we need it to do - the mission and distinctiveness of WPI depends on the essential contributions of teaching intensive faculty who continuously innovate and improve on our student-centered educational programs and practices. Establishing tenure positions for teaching faculty are part of WPIs broader commitment to inclusive development and retention of faculty aligned with WPIs institutional mission. Prof. Boudreau explained that the value of these faculty members is being recognized through the three motions that are being introduced today.

Prof. Richman explained that the overall rationale has to do with the need to address certain institutional challenges. There are ethical and professional imbalances. We recognize the high value of contributions from the TRT faculty to WPI, but have made a fairly weak institutional

commitment to them. That's an imbalance that we need to correct. There's also an inconsistency between our own institutional values and our educational values and the compromise status of this group of faculty that are so invaluable. Our academic programs could not be delivered, without the TRT faculty, and that is an inconsistency that has to be repaired. We've set up these inequitable and non-inclusive cultures and structures and the culture is just generally about seeing the TRT faculty as a second-class citizen and by not affording them access to tenure. This is fundamentally inequitable and non-inclusive. We're addressing also a systemic problem throughout higher education and it's an opportunity for WPI to make history. Our goal is to have impact beyond the campus. We, as well as most universities, have grown increasingly dependent on non-tenure track faculty to carry out their core missions and yet the non-tenure track faculty lack academic freedom and job security. To solve this problem as well, we are advocating for secure contracts for those TRTs that will not be incorporated into the tenure-track system, so that they can fully participate as full citizens of the university.

Prof. Boudreau explained that developing secure contracts is one of the ways to support the faculty members who don't go on the tenure track that will enable them to fully participate in governance. These are paired because full participation in governance requires freedom to speak one's mind, which requires security.

Prof. Boudreau explained that there are three motions to establish the teaching tenure track. The first motion explains the **tenure criteria** specific to the particular responsibilities of TT teaching mission professors.

The next motion will look at the **institutional statement on faculty rules and balance** between different groups of faculty.

The final motion is the **guidance document** to supplement the general criteria to help faculty figure out how to demonstrate and evaluate quality and impact.

She explained that COG and the TRT Council continue to work on the contract language and the inclusion in faculty governance which will be in additional motions coming this spring.

Prof. Boudreau moved that the tenure criteria be adopted for Assistant, Associate, and Full Professors of teaching and that the tenure criteria be added to Section Two Part One of the Faculty Handbook as described below.

What we are expecting is that the work they do must be high quality and with significant impact. This is the language of the promotion criteria that passed a few years ago. High quality means it's based on evidence-based research on how students learn best or might be documented with learning outcomes assessments that you've done. The category of continuing professional growth and currency means the candidate must be committed in a manner that has significant impact on the activity itself. These can't be separated, the commitment and the impact. Commitment means you're not just a member of a society where you pay your dues. We have faculty who are doing innovative teaching that they've shared with others who've adopted it or they've won awards externally, for it. Professional growth and currency could be disciplinary scholarship that's published and the activities should inform the teaching, experiments, and innovations and be disseminated to others within and outside of WPI. A public impact doesn't have to be a peer

reviewed article or a funded research project, it just has to be disseminated in ways that demonstrate impact.

Prof. Richman explained that they agreed that a statement of why we have these positions will be necessary since they will be unusual. This needs to be attached directly to the criteria itself as a reminder of what we're trying to accomplish with these positions. What we mean by professional growth and it can be accomplished in many ways. You can develop knowledge, you can acquire skills, you can accumulate experiences for the sake of enhancing WPI's mission and its visibility. Currency means that you take this professional growth that you turn around and you're able to make contributions to professional communities within and beyond WPI in real time. Without this addition, there was ambiguity and there is a danger of misunderstanding. There also is the issue of titles. In the end we decided on Assistant, Associate, and Full professors of teaching, which is different than teaching professors. We could have aligned the titles with tenure status or we could have come up with a new title, but after listening to input from the TTTs and TRTs we decided that coming up with a new title that distinguishes this group from the rest of the faculty is the way to go. Prof. Richman explained that this will set an example for higher ed that will enhance our visibility and reputation. Most importantly, it will increase TRTs' personal investment in the university and there's no better way for the university to get faculty to work hard on its behalf than to show this kind of a commitment. The tenure system invests faculty in their institutions. These changes will allow us to recruit excellent teaching faculty. It will show external candidates the value we place on their roles and the long-term opportunities they will have at WPI. This will put us ahead of our competition when trying to attract teaching faculty in national searches. This is going to unify the Faculty and strengthen the Faculty.

Implementation of the new tenure-track will be another community effort. It is part of the process of bringing us together. Prof. Richman pointed out that the challenge here is knowing in what level of detail to provide in implementation. The temptation is the overprescribe and what we wanted to do instead is just outline it in general terms for those who will actually have to carry this out. We've broken the decisions that need to be made down into three sub steps. One decision that will have to be made is about the number of tenure track lines to be opened each year. This decision will be made by the Provost, but we foresee it as a community effort. The Provost is not going to make this kind of decision without input from the Deans, Department heads, or DTC. This will be based on thorough assessment of the current teaching faculty and it will also depend on what the departmental needs are and what our institutional goals are. And second of all, once the number of tenure track lines is decided each year, there's the really difficult question of who will be placed on those available lines, and this has to be done in an open, transparent way. This relies on a collaboration of different members of our Community. The department heads are going to play a big role in this, because they probably know their faculty the best. This will be based on faculty members' past accomplishments and their potential to satisfy the criteria. Once person is identified as being suitable for the tenure track, there is a decision about the length of the probationary period. This depends on their past accomplishments and the time they serve would be recommended to the Provost by the Dean. Prof. Richman added that the process needs to be collaborative between Department head, the faculty member and the DTC. As part of the implementation, we anticipate turning to CTAF to contemplate any changes that might have to be made to our tenure and pre-tenure review processes. We would imagine that they would get to work on that almost immediately. If the motion passes, the reviews of the TRT faculty need to start immediately because our goal would

be to identify the first cohort of faculty to be put on this new tenure track effective July 1st this year and appointment letters are distributed in April. Prof. Richman added that while complex, implementation strengthens the proposal because it would require broad community involvement.

Prof. Boudreau pointed out that equity is not the only consideration here and those of us with tenure recognize the value of the tenure system. Rigor and high standards are really important. Nobody wants to be known as the place where anyone gets tenure. The tenure criteria are aspirational and set a higher standard for the teaching faculty. The criteria are clear and they are explicit, but not unachievable. Prof. Boudreau added that she thinks we have found the sweet spot for people who are worried about rigor, people who are worried about equity, people who are worried about scholarship or outside dissemination. The chronicle of higher education listed us as scoring really, really high, and we might have been the top institution for confidence among the Faculty in our tenure process. We trust this tenure process because we've been through it on all sides as DTC, as tenure track faculty, as members of CTAF, as Department heads, and now Deans. It's a trusted process, and so the process consists of both the annual department reviews, but also ongoing professional mentoring, which again is afforded to the tenure track faculty. Prof. Boudreau expressed her confidence in the process and implementation - a tried-and-true process that is consistent with our established institutional goals.

Prof. DiBiasio (CHE) thanked everyone who has participated in this. He added that it's really been a huge effort, and it could have easily been set aside for a year or two given the pandemic that we're dealing with so kudos to all of you. He explained that he has been here a long time, which means he has had a lot of experience doing different things including traditional research-based tenure, several years as an Assessment Coordinator and Center Director, advising off-campus, being a department head, and now working with the GPS. He stated that the intellectual depth and dedication and high-quality scholarship that TRT faculty have been doing is just amazing. Out of the last six outstanding teaching awards here at WPI, we've given four of those to non-tenure track faculty. He mentioned that this speaks volumes about the quality of their contributions. When looking at the most prestigious most well-known honor given an engineering education, the George Gordon prize from the National Academy, which WPI was honored with in 2016, the non-tenure track faculty earned this award. The award was granted because of the GPS and Global Program, which is mainly run by non-tenure track faculty. Prof. DiBiasio added that he thinks it's ironic that everyone was tenured when they put the plan and we quickly evolved into a place where you couldn't get tenure for just teaching, it was just for doing research. If you really wanted to just do teaching you probably would not get tenure. If you could slip by and get tenure for that you could forget promotion, because the promotion committee was hardly ever going to let anybody through for high quality teaching and educational scholarship. The good news is we fixed the promotion thing but we've now got the big disconnect with the tenure part at the front end of it. Prof. DiBiasio stated that he is in favor of this motion. This is the opportunity during this pandemic to get out in front of everybody else and make a huge positive public statement that we're valuing teaching and learning as well as empowering, honoring, respecting, and privileging those people that have made WPI's reputation in the last couple of decades.

Department Head Roberts (CHE) asked what resources will be available as we move people to the tenure track. She expressed concern over balancing 45 or 50 new positions in the next three years with the current financial state of the institution.

Prof. Richman stated that this will be answered in the next motion, but it is important to understand that these tenure track positions will not in any way from others. This was a concern that was raised, and we've addressed it in the second motion. This has been discussed with Kris Sullivan, Provost Soboyejo, and the Board of Trustees. The administration has done the analysis and agrees that these costs are fairly small.

Provost Soboyejo added that they have worked really closely to really look at the financial implications of this over a 10-year period and he assured everyone that the numbers that are presented here are certainly within the realm of what we have projected and will not disrupt financial capacity to honor our commitments to all our faculty. There's been a process of give and take here - looking at long-term commitments and at institutional capacity to honor our commitments. There's been very careful evaluation and thoughtful evaluation by the Board. Provost Soboyejo added that they really see this as an important step in honoring our teaching faculty as this institution that values equally teaching, research, and scholarship in a way that we can build on, as part of who we are. The processes that have been recommended are close to the kind of processes we use anyway for identifying and assessing faculty. Provost Soboyejo stated that he feels comfortable that the institution financially will be able to honor these and it will not affect the hiring of other kinds of faculty as well.

The motion passed with 122 votes in favor, 13 opposed (90% approval).

Prof. Boudreau moved that the text and title of Part One Appendix D, which is the part of the Faculty Handbook that lists the roles played by 10-year tenure-track faculty and non-tenure track faculty in carrying out the WPI mission, be updated.

The purpose of this motion is to assure a proper balance between dual mission TTTs and teaching track TTTs. This wouldn't happen because we have a great research footprint, which we have been funding, talking about, and supporting. This appendix said the significant majority of credits delivered would be delivered by tenure track faculty. Every year there was a COG presentation about the credits delivered, which sent the wrong message to the TRTs that they weren't valued. Every year we have been working on increasing our research footprint, but we have also been doubling down on our distinctive undergraduate education including the project-based learning. The faculty numbers and what they are assigned to do should reflect these goals.. The balance between the dual mission is 70% of the conventional tenure-track and 30% of the full-time teaching faculty. Prof. Boudreau explained that we have a great reputation and great success internally by our own standards for our undergraduate teaching, project advising, and research. It makes sense to make this our institutional goal. If we change our mission, we can always reevaluate this. Prof. Boudreau then explained that within the 30% of teaching professors, 40% of those would go on this new tenure track and the remaining 60% would remain non-tenure track. We will work on these conditions in another motion, but these ratios are part of our three-year goal, which we hope to reach by 2023. If this goes well, adding more faculty to this tenure track is a possibility that could be considered. When this was discussed in November, this balance was at 50-50% but we have reconsidered since then along with changing the

implementation from five to three years. Prof. Boudreau added that we still conduct periodic university wide examination based on strategic priorities and we also retain the Annual report to the faculty.

Prof. Richman explained that the 70-30% balance gets into the question of what balance we want at the university between teaching and research. This does not mean that the 70% all do research and the 30% do not. Both groups do both, but load expectations would be different for these two groups. We are a serious research university that is serious about our teaching, but we need to consider the constraints of the budget and financial factors. In 2019-2020 we had 264 TTTs and 392 full time faculty members. This is 67.3%, which isn't far from the 70% in this motion. We are not proposing a dramatic change, but rather saying that we are fairly comfortable with where we are and in the direction we are headed. After several discussions with faculty and administration including Provost Soboyejo and President Leshin, we settled on the 40-60% balance within the teaching faculty. This is based on a balance of institutional values and commitment. A survey was done with the TRT faculty to gauge interest in this tenure track, which helped decide that the 40-60% ratio represents a good balance.

Prof. Dominko requested a motion to extend the meeting for 15 minutes. Prof. Spanagel motioned for the extension. The motion passed.

Prof. Rangwala (FPE) stated that he is supportive of this concept. He asked about the division of these two groups of teaching and research in terms of the flexibility of the tenure criteria for each track and the overlap that may or may not be present.

Prof. Boudreau stated that the department heads always have the discretion of reassigning faculty loads. If there is a tenure track faculty member who is not doing any research, the department head can increase their teaching load, or they can grant them release if they are working on an important research project. This motion does not change any of the discretionary power that a department head has right now.

Prof. Billiar (BME) asked if there is anything holding these numbers in place. He expressed concern with numbers of course credits in the past that kept creeping up since there wasn't much that could be done about it.

Prof. Boudreau stated that there isn't anything, but this is a situation where we need to trust each other to not make dramatic changes without having conversations about institutional goals and different strategic priorities. It could happen, but this is part of shared governance and trust. This will evolve as the institution develops, but we will keep evaluating where we are at a given point.

This motion passed with 118 votes in favor and 4 opposed (97% approval).

Prof. Boudreau, on behalf of the Committee on Governance, moved that the guidance for documenting and assessing activities for tenure for professors of teaching be added to Section Two Part One of the Faculty Handbook following the tenure criteria for professors of teaching.

Prof. Richman stated that they see this as part of the tenure criteria but they want to be able to have discussions about the substantive part of the criteria separate from the details documenting it. This has gone through some changes since November. He thanked Prof. Demetry and Prof. Farny for their constructive input that has been incorporated. In the revised version, activities were separated based on quality and impact. They separated out the quality activities and then focused on ways to demonstrate that those activities are undertaken with well-founded rationale. It specifies that the impact is measured by the effect that one's teaching has on others, which does include course evaluations, reviews, and project feedback from sponsors. In terms of professional growth, it wasn't as easy to separate activities because it's one's professional activities that demonstrate their commitment. There is a list of activities that one could engage in that may demonstrate commitment. They are focused on active involvement rather than passive involvement. In teaching practice, it is left to the candidate to demonstrate how the results affect others.

This motion passed with 116 vote in favor and 3 opposed (98% approval).

Prof. Boudreau added that the credit for conceiving a teaching path to tenure goes to Prof. Richman. Four years ago, before any of us were talking about it or thinking about it, his persistence gradually took hold with others and convinced her that we may be able to achieve this goal. She stated with confidence that we would not be here today without Prof. Richman.

Prof. Spanagel motioned to extend the meeting for 10 minutes. This motion was approved.

4. President's Closing Remarks

President Leshin welcomed everyone to C-Term and stated that having so much happen on day one bodes well for the semester we have ahead of us. She added that she greatly appreciates all the work everyone has done to get ready to launch this most unusual mode in this most unusual year. She expressed her gratitude and appreciation for all the work everyone has done to get us to this point of having our students back on campus.

She congratulated the team on this amazing step towards aligning our structures with our values. If we can keep this conversation going there is nothing that can stop us. She is thrilled to have been here and been a part of this. President Leshin thanked Prof. Boudreau, Prof. Richman, and Prof. Dominko for the work that they have done as well as the members of the TRT Council and those TRT faculty members who went through many meetings.

The Board of Trustees has made it very clear that their intent and support for full enfranchisement of all full-time faculty on this campus really matters and our commitment to that matters. President Leshin urged everyone to continue to work on this so that the Board can feel comfortable in their decision to push forward. The intent is to work collaboratively to make this happen this academic year so that next academic year we are in a position to execute all of these things. President Leshin stated that we are not going to stop until we've got it all done, which is her commitment to everyone. She is confident that the Board will be supportive.

President Leshin gave a COVID update in the Town Hall on Tuesday, January 26th, which is available on YouTube. The number of students who are positive is a bit higher than it was in the fall, but this is as expected and it is what we prepared for. We were able to vaccinate not only our frontline healthcare and safety workers, but those from other institutions on our campus over the break. She is working every day to try to advance ways that we will bring more vaccines to our campus over the coming months. President Leshin added that we also have accreditations and strategic planning this spring. These are discussions about where this great institution has been and where it is going. Our focus is to transform lives to confront the world's greatest challenges and to revolutionize STEM. She closed by thanking everyone.

5.Provost's Closing Remarks

Provost Soboyejo thanked Prof. Dominko and President Leshin. He added that he feels so proud and so thankful to our faculty. He also shared his appreciation to President Leshin and the Board of Trustees for the understanding and support that we have received in this whole endeavor. Provost Soboyejo also thanked Prof. Boudreau, Prof. Richman, and Prof. Dominko for tolerating him with some of the methods that he used to understand every part of this proposal. He thanked the TRT faculty for being constructive and thoughtful in a way that has brought us this far. As we look ahead, I can assure you that we will continue to work hard. He added that he can also show everyone that the institution is committed in ways that really resonate with him and as we look to the future, we will be presented in this joint lead to the Board. The APC chairs will be meeting with us before the Board meeting to better understand the proposal in a way, that he believes will help them explain this clearly to all the stakeholders. Provost Soboyejo very much looks forward to the day when every faculty member will have a vote and will have a voice, the way that this group has shown it is willing to endorse. He had come here wanting to talk about Amanda Gorman and how she inspired him at the inauguration, but he would like to leave here today by telling the WPI faculty that he is inspired by how they stood up today and showed what we stand for, as a community. Provost Soboyejo hopes that in spite of COVID, that everyone takes time to enjoy some of the beautiful things in New England. He hopes everyone finds some joy in the winter, find some joy in the term, don't stress your students out, and make the most of the weeks and months ahead.

6.Closing Announcements

Prof. Dominko mentioned that everyone witnessed a tremendous achievement today and she is proud to have had an opportunity and honor to be part of the Faculty Governance that contributed to making this happen. She thinks we all should be proud of it, but we need to keep it growing, making it better with everything else that we do. There is no limit where, as an institution, we can be in years to come. She thanked everyone for their work. Several faculty members including Prof. Neamtu (CS), Prof. Danielski (HUA), Prof. Kafle (PH), Prof. Clark (HUA), Prof. Zekavat (PH), and Prof. Heilman (CBC) thanked COG and Prof. Dominko for this successful meeting.

7. Adjournment

Meeting was adjourned at 5:07pm by **Prof. Dominko**.

Respectfully submitted,

Tanja Dominko

Secretary of the Faculty

Addenda on file with these minutes:

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These motions were erroneously included on the list of CAO consent motions in January 28, 2021 consent agenda motions – text of the motions was not included in the consent agenda. The motions are included in the current materials and listed above.	
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Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to change the title and description for CE 3050: Transportation: Traffic Engineering, as approved by the Civil and Environmental Engineering Department on February 2, 2021.

Motion: The Committee on Academic Operation recommends, and I move, that the title and description for CE 3050: Transportation: Traffic Engineering be changed as described below.

Existing title, description and course offering schedule:

Transportation: Traffic Engineering

Cat. 1

This course provides an introduction to the field of transportation engineering with particular emphasis on traffic engineering. Topics covered include a description of the transportation industry and transportation modes; characteristics of drivers, pedestrians, vehicles and the roadway; traffic engineering studies, highway safety, principles of traffic flow, intersection design and control, capacity analysis, and level of service analysis.

Suggested background: CE 2020

Proposed title, description and course offering:

Traffic Engineering

Cat. 1

This course provides an introduction to the field of transportation engineering with particular emphasis on traffic engineering. Principles, such as traffic studies, highway safety, traffic flow, intersection design and control, capacity analysis, and level of service analysis are included. In addition, basic highway design parameters associated with curves and sight distance are covered. Regional transportation systems and sustainable development are also discussed and analyzed; and concepts associated with parking, public transportation, and travel demand modeling are introduced.

Explanation of Motion: There are three notable changes:

1. Change to Title: The previous title included the subdiscipline name as a preface to the course name ("Transportation: Traffic Engineering). However, the majority of the courses in the Department do not follow this nomenclature. As such, the Civil and Environmental Engineering Faculty agreed that the prefix should be removed.
2. Change to Description: The description of the course had not been updated in many years, despite ongoing enhancements to course content to retain currency with the profession. Thus, the description needs to be updated to better describe the topics included in the course.
3. Removal of "Suggested Background": While some exposure to the surveying topics covered in CE 2020 can be helpful for the geometric design components in this course, it is not needed, and students should not be discouraged from taking the course due to a perception of having insufficient background.

Rationale: We propose this change in order to provide consistency with the Civil Engineering curriculum; to maintain an accurate description of course content, and to expand the opportunity for more students to take the course.

Impacts on students: The proposed change has no impact on distribution requirements; however, a minor positive impact on students could result from a more accurate title and description, and by the elimination of the “suggested background.”

Resource Needs: No new resources are required.

Implementation Date: Academic year 2021-22.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to change the title of CE 3051: Transportation: Pavement Engineering, as approved by the Civil and Environmental Engineering Department on February 2, 2021.

Motion: The Committee on Academic Operation recommends, and I move, that the title for CE 3051: Transportation: Pavement Engineering be changed as described below.

Existing title, description and course offering schedule:

Transportation: Pavement Engineering

Cat. 1

This course provides an introduction concepts required for design construction and management of pavements. Topics include Highway Drainage, Soil Engineering for Highway Design, Bituminous Materials, Design of Flexible and Rigid Pavements and Pavement Management. Knowledge of the subject matter in CE 3050 is helpful but not required.

Proposed title, description and course offering:

Pavement Engineering

Cat. 1

This course provides an introduction concepts required for design construction and management of pavements. Topics include Highway Drainage, Soil Engineering for Highway Design, Bituminous Materials, Design of Flexible and Rigid Pavements and Pavement Management. Knowledge of the subject matter in CE 3050 is helpful but not required.

Explanation of Motion: The previous title included the subdiscipline name as a preface to the course name (“Transportation: Pavement Engineering). However, the majority of the courses in the Department do not follow this nomenclature. As such, the Civil and Environmental Engineering Faculty agreed that the prefix should be removed.

Rationale: We propose this change in order to provide consistency with other course titles within the Civil and Environmental Engineering Department.

Impacts on students: The proposed change has no impact on distribution requirements; however, a minor positive impact on students should result from a more accurate title.

Resource Needs: No new resources are required.

Implementation Date: Academic year 2021-22.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to change distribution requirements for B.S. Degree in Civil Engineering, approved by Department of Civil and Environmental Engineering on February 9, 2021

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

Existing Distribution Requirements:

REQUIREMENTS	MINIMUM UNITS
1. Mathematics and Basic Science (Note 1).	4
2. Engineering Science and Design (including the MQP) (Note 2).	6

NOTES:

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

Proposed Distribution Requirements:

REQUIREMENTS	MINIMUM UNITS
1. Mathematics and Basic Science (Note 1).	4
2. Engineering Science and Design (including the MQP) (Note 2).	6

NOTES:

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

Rationale

The distribution requirements for the CE major were revised in the 2019-2020 academic year. At that time, the “Mathematics and Basic Sciences” requirements did not specify whether GPS (FY) courses could be used to satisfy those requirements. The department was asked to clarify this issue when the new requirements were being updated in BannerWeb. Thus, this change clarifies that GPS (FY) courses can be used to satisfy the 1/3 unit “elective” in Mathematics and Basic Sciences. Prefixes have been added to Notes 1a and 1b to further clarify that GPS (FY) classes would not count for those requirements.

Impact

This change serves to clarify what courses can be used to satisfy Mathematics and Basic Sciences in CE, and will help students plan their schedules accordingly. The program chart in the undergraduate catalog and the tracking sheet for the CE major will also be updated to reflect this clarification.

Implementation Date

Implementation date for this action is immediate, as this is only a clarification of existing distribution requirements.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to add *Intermediate Arabic I, AB2531*, approved by the Department of Humanities and Arts on 11-06-2020

Motion: The Committee on Academic Operation recommends, and I move, that *Intermediate Arabic I, AB2531* as described below be added.

Course/Catalog Description: AB2531, Intermediate Arabic I, Category I.

This course builds on the knowledge and skills that students learn in the elementary level courses (AB 1531, AB 1532 and AB 1533). Students continue learning Modern Standard Arabic with moderate exposure to phrases and expressions in Darija, Moroccan colloquial Arabic. The course employs a student-centered approach that focuses on receptive language skills (reading and listening) and productive language skills (speaking and writing); it also integrates culture and authentic materials in order to create real-life opportunities for language practice/use and to develop students' cultural competency. By the end of this course, students should be able to use tense appropriately to describe actions and events, describe their daily routines, describe personal and professional relations and report bibliographical and general information. Course assignments include daily homework, short quizzes, skits, presentations and/or an oral exam.

Students cannot receive credit for both AB 210X and AB 2531.

Recommended Background: AB1531, AB1532 & AB1533 or instructor approval; *this course is closed to native speakers of Arabic and heritage speakers except with written permission from the instructor.*

Anticipated instructor: Prof. Mohammed El Hamzaoui (a change from previous instructor)

Rationale: This course will replace a previous experimental Intermediate Arabic course (see attached course proposal) that was taught once each year in the last five academic years (2015-2016 through 2019-2020) but that was never transitioned into a permanent course by the previous instructor. See attached addendum for enrollment data, 2017-2020. Our reasons for wanting to make this a permanent course are multiple: 1) It functions as part of a 6-course Arabic sequence that includes elementary- and intermediate-level courses (AB 1531, AB 1532, AB 1533, AB 2531, AB 2532, AB 2533) and that mirrors our other language sequences in Chinese, German, and Spanish. 2) A 6-course sequence will allow students to complete their HUA requirement in Arabic, as they are able to do in Chinese, German, and Spanish. 3) It offers students with an interest in the Middle East and North Africa an opportunity to take language courses as part of their HUA requirement and then complete their IQP project at the Morocco Project Center. HUA is working with the Global Experience Office (GEO) to implement a process by which students with a demonstrated interest in one of our regional hubs (as China and Latin America) can complete related HUA coursework and then undertake their IQP in the region. 4) Once students have completed their HUA requirement in Arabic, they can then complete a minor in Arabic or MENA (Middle East and North Africa) Studies at our Morocco HUA Project Center, as three students did in C-term 2020. 5) It contributes to the Provost's

strategic commitment to the MENA region and dovetails HUA's work to institutionalize a MENA Hub that will work alongside the China Hub and the Latin American and Caribbean Studies (LACS). Beyond these enumerated reasons, HUA is interested in transitioning what has been an experimental course into a permanent course for more practical reasons: as a permanent course, it will appear in the course catalog, yielding far more visibility to students and advisors. The Arabic course sequence has experienced low enrollment throughout its existence in part because the information on Arabic in the current catalog does not indicate that a student can complete their HUA requirement in Arabic. As such, faculty advisors tend to suggest that students use it only to fulfill their HUA breadth requirement, meaning that students will only take the first 2 Arabic courses (AB 1531 and 1532). This was the case with the ROTC program, where multiple cadets have recently reported that they didn't enroll in intermediate-level Arabic courses because they couldn't find them listed in the course catalog. We've since had conversations with ROTC leadership, and they're enthusiastic about cadets' involvement in the Arabic program, including the 6-course Arabic sequence and a subsequent minor at the Morocco HUA Project Center.

Implementation date: AY2020-2021

Resource Requirement:

- a) What currently available resources will be needed: A classroom.
- b) What new resources will be needed: No new resources will be required.

Proposal for Experimental Course

To: Committee Chair, Committee on Academic Operations

From: Kris Boudreau, Department of Humanities and Arts

Re: Motion for Experimental Course Sequence for Second Year Arabic, AB 210X, AB 220X, and AB 230X

Date: April 9, 2015

The Department of Humanities and Arts requests the approval of the following three experimental courses: Arabic (AB), AB 210X, AB 220X, and AB 230X (Intermediate Arabic I, II, III,) in Academic Years 2015-16 and 2015-16 during D, A, and B terms.

Contact: Prof. Jennifer deWinter and Prof. Bland Addison

Preferred term: D, A, B,

Expected enrollment: up to 25 in each class; realistically, we expect 12-18 students

Course type: If it becomes permanent, Category I.

Intended audience: These courses are intended for WPI students interested in acquiring linguistic and cultural competency in Arabic and Middle Eastern/North African cultures. The audience is potentially all students who take the first year Arabic sequence, as well as students with the equivalent background in Arabic. *These courses are not open to native or heritage speakers of Arabic, unless by written approval of the instructor.*

Anticipated Instructor: Prof. Brahimi or a part-time instructor not yet identified.

Course/Catalog Description:**AB 210X, Intermediate Arabic I**

This course will build on advanced beginning Arabic conversational patterns. Class time will focus on dialogue and mastery of grammatical constructions with increased emphasis on writing and reading. Conversational drills, audio recordings, video, and group interaction will enhance classroom learning. Not open to native or heritage speakers without written permission of instructor. Recommended background: AB 1533 Beginning Arabic III

AB 220X, Intermediate Arabic II

This course will build on advanced beginning and intermediate Arabic conversational patterns. Class time will focus on dialogue and mastery of grammatical constructions, with increased emphasis on reading and writing. Conversational drills, audio recordings, video, and group interaction will enhance classroom learning. Not open to native or heritage speakers without written permission of instructor. Recommended background: AB 210X Intermediate Arabic I

AB 230X, Intermediate Arabic III

This course continues to build on students' advanced beginning Arabic conversational skills with a focus on dialogue and mastery of grammatical constructions. Increasing emphasis on reading and writing will supplement classroom activities. Conversational drills, audio recordings, video, and group interaction will enhance classroom learning. Not open to native or heritage speakers without written permission of instructor. Recommended background: AB 220X Intermediate Arabic II

Rationale: Arabic languages are spoken by a number of countries in the Middle East and Northern Africa. Arabic-speaking nations are important to understand because they are important to the United States in areas ranging from national security, foreign relations, and trade to climate change policy. Moreover, as Arabic-speaking countries offer cultural histories rich of rich literary, philosophical, artistic, and historical traditions, studying it introduces students to the cultural setting and richness of Middle Eastern and North African civilizations.

We have had Arabic in the HUA curriculum for three years now, and students are increasingly demanding a continued sequence for them to study the language and culture. Further, the Moroccan project center has increased in popularity since its transformation into an IQP and HUA center that also supports other grant-funded teaching and research opportunities, and the Arabic classes prepare eager students for this project center. As the Moroccan project center continues to grow, we anticipate demand for Arabic will as well. We are unable to predict all the ways in which this project center will evolve; however, we can point to a current MQP student working on a Moroccan-based project.

The purpose of this course sequence is to add Intermediate Arabic to WPI's curriculum in order to allow our students taking first year Arabic to continue in their language studies. Students who finish the sequence will reach advanced intermediate level of language competency.

Resource Requirement:

- 1) If this sequence becomes permanent, it will become part of regular annual offerings (Category I). Prof. Brahimi, the current instructor of first-year Arabic, is expected to teach the course. Any smart classroom on campus will serve the purposes of this class.
- 2) The previous offerings of first year Arabic show that current classrooms are sufficient in terms of size and technology.

Assessment: The course will be evaluated by assessing the conversational competence of the students who pass the course. Student feedback will be gathered by using WPI's course evaluations, with particular attention being paid to questions 1, 2, 9, and 26.

Impact: This course sequence will allow us to add an Arabic language track for the HUA requirement, similar to the Spanish, German, and Chinese tracks, as well as increase opportunities for students who want to pursue Middle Eastern and North African area studies at WPI.

Students taking all 6 Arabic courses who reach at least the level of AB 230X (the 6th course in the Arabic language sequence) can take AB 230X as their 6th course in HUA, thereby fulfilling their HUA Requirement through an Arabic language track practicum.

This sequence of intermediate Arabic language classes will benefit students who want to achieve Arabic language proficiency along with their STEM fields, students interested in project work in Morocco or other Arabic-speaking countries, and students interested in International Studies at WPI.

Addendum: Student Course Report Data for Experimental Arabic Courses

The following table reports the results of the standard assessment questions for the offerings of the experimental versions of the Arabic courses offered since 2017.

	<i>Count</i>	<i>Q1</i>	<i>Q2</i>	<i>Q7</i>	<i>Q19</i>
Overall	83	4.52	4.49	3.94	2.03
201602_D					
AB 210X INTERMEDIATE ARABIC I	7	4.57	4.29	4.14	1.71
201701_A					
AB 220X INTERMEDIATE ARABIC II	3	4.33	4.33	4.67	2.00
201701_B					
AB 230X INTERMEDIATE ARABIC III	4	5.00	5.00	4.75	1.75
201702_D					
AB 210X INTERMEDIATE ARABIC I	4	5.00	5.00	4.25	2.00
201801_A					
AB 220X INTERMEDIATE ARABIC II	7	5.00	4.86	4.14	2.00
201801_B					
AB 230X INTERMEDIATE ARABIC III	5	5.00	5.00	4.40	2.00
201802_D					
AB 210X INTERMEDIATE ARABIC I	13	4.38	4.23	3.92	2.08
201901_A					
AB 220X INTERMEDIATE ARABIC II	10	4.30	4.40	3.60	2.22
201901_B					
AB 230X INTERMEDIATE ARABIC III	10	4.60	4.50	3.80	2.25
201902_D					
AB 210X INTERMEDIATE ARABIC I	8	4.13	4.50	3.63	2.00
202001_A					
AB 220X INTERMEDIATE ARABIC II	6	4.33	4.50	3.67	2.00
202001_B					
AB 230X INTERMEDIATE ARABIC III	5	4.20	4.20	3.60	2.00

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to add *Intermediate Arabic II, AB2532*, approved by the Department of Humanities and Arts on 11-06-2020

Motion: The Committee on Academic Operation recommends, and I move, that *Intermediate Arabic II, AB2532* as described below be added.

Course/Catalog Description: AB2532, Intermediate Arabic II, Category I.

This course is a continuation of AB 2531. Students continue learning Modern Standard Arabic (MSA) with limited exposure to phrases and expressions in Darija, Moroccan colloquial Arabic. The course employs a student-centered approach that focuses on receptive language skills (reading and listening) and productive language skills (speaking and writing); it also integrates culture and authentic materials in order to create real-life opportunities for language practice/use and to develop students' cultural competency. By the end of this course, students should be able to read and understand the gist of authentic texts in MSA, answer basic comprehension questions, differentiate between parts of speech and use parts of speech to reproduce or produce short texts in MSA. Course assignments include daily homework, short quizzes, skits, presentations and/or an oral exam.

Students cannot receive credit for both AB 220X and AB 2532.

Recommended Background: AB1531, AB1532, AB1533 & AB2531 or instructor approval; *this course is closed to native speakers of Arabic and heritage speakers except with written permission from the instructor.*

Anticipated instructor: Prof. Mohammed El Hamzaoui (a change from previous instructor)

Rationale: This course will replace a previous experimental Intermediate Arabic course (see attached course proposal) that was taught once each year in the last five academic years (2015-2016 through 2019-2020) but that was never transitioned into a permanent course by the previous instructor. See attached addendum for enrollment data, 2017-2020. Our reasons for wanting to make this a permanent course are multiple: 1) It functions as part of a 6-course Arabic sequence that includes elementary- and intermediate-level courses (AB 1531, AB 1532, AB 1533, AB 2531, AB 2532, AB 2533) and that mirrors our other language sequences in Chinese, German, and Spanish. 2) A 6-course sequence will allow students to complete their HUA requirement in Arabic, as they are able to do in Chinese, German, and Spanish. 3) It offers students with an interest in the Middle East and North Africa an opportunity to take language courses as part of their HUA requirement and then complete their IQP project at the Morocco Project Center. HUA is working with the Global Experience Office (GEO) to implement a process by which students with a demonstrated interest in one of our regional hubs (as China and Latin America) can complete related HUA coursework and then undertake their IQP in the region. 4) Once students have completed their HUA requirement in Arabic, they can then complete a minor in Arabic or MENA (Middle East and North Africa) Studies at our Morocco HUA Project Center, as three students did in C-term 2020. 5) It contributes to the Provost's

strategic commitment to the MENA region and dovetails HUA's work to institutionalize a MENA Hub that will work alongside the China Hub and the Latin American and Caribbean Studies (LACS). Beyond these enumerated reasons, HUA is interested in transitioning what has been an experimental course into a permanent course for more practical reasons: as a permanent course, it will appear in the course catalog, yielding far more visibility to students and advisors. The Arabic course sequence has experienced low enrollment throughout its existence in part because the information on Arabic in the current catalog does not indicate that a student can complete their HUA requirement in Arabic. As such, faculty advisors tend to suggest that students use it only to fulfill their HUA breadth requirement, meaning that students will only take the first 2 Arabic courses (AB 1531 and 1532). This was the case with the ROTC program, where multiple cadets have recently reported that they didn't enroll in intermediate-level Arabic courses because they couldn't find them listed in the course catalog. We've since had conversations with ROTC leadership, and they're enthusiastic about cadets' involvement in the Arabic program, including the 6-course Arabic sequence and a subsequent minor at the Morocco HUA Project Center.

Implementation date: AY2020-2021

Resource Requirement:

- a) What currently available resources will be needed: A classroom.
- b) What new resources will be needed: No new resources will be required.

Proposal for Experimental Course

To: Committee Chair, Committee on Academic Operations

From: Kris Boudreau, Department of Humanities and Arts

Re: Motion for Experimental Course Sequence for Second Year Arabic, AB 210X, AB 220X, and AB 230X

Date: April 9, 2015

The Department of Humanities and Arts requests the approval of the following three experimental courses: Arabic (AB), AB 210X, AB 220X, and AB 230X (Intermediate Arabic I, II, III,) in Academic Years 2015-16 and 2015-16 during D, A, and B terms.

Contact: Prof. Jennifer deWinter and Prof. Bland Addison

Preferred term: D, A, B,

Expected enrollment: up to 25 in each class; realistically, we expect 12-18 students

Course type: If it becomes permanent, Category I.

Intended audience: These courses are intended for WPI students interested in acquiring linguistic and cultural competency in Arabic and Middle Eastern/North African cultures. The audience is potentially all students who take the first year Arabic sequence, as well as students with the equivalent background in Arabic. *These courses are not open to native or heritage speakers of Arabic, unless by written approval of the instructor.*

Anticipated Instructor: Prof. Brahimi or a part-time instructor not yet identified.

Course/Catalog Description:

AB 210X, Intermediate Arabic I

This course will build on advanced beginning Arabic conversational patterns. Class time will focus on dialogue and mastery of grammatical constructions with increased emphasis on writing and reading. Conversational drills, audio recordings, video, and group interaction will enhance classroom learning. Not open to native or heritage speakers without written permission of instructor. Recommended background: AB 1533 Beginning Arabic III

AB 220X, Intermediate Arabic II

This course will build on advanced beginning and intermediate Arabic conversational patterns. Class time will focus on dialogue and mastery of grammatical constructions, with increased emphasis on reading and writing. Conversational drills, audio recordings, video, and group interaction will enhance classroom learning. Not open to native or heritage speakers without written permission of instructor. Recommended background: AB 210X Intermediate Arabic I

AB 230X, Intermediate Arabic III

This course continues to build on students' advanced beginning Arabic conversational skills with a focus on dialogue and mastery of grammatical constructions. Increasing emphasis on reading and writing will supplement classroom activities. Conversational drills, audio recordings, video, and group interaction will enhance classroom learning. Not open to native or heritage speakers without written permission of instructor. Recommended background: AB 220X Intermediate Arabic II

Rationale: Arabic languages are spoken by a number of countries in the Middle East and Northern Africa. Arabic-speaking nations are important to understand because they are important to the United States in areas ranging from national security, foreign relations, and trade to climate change policy. Moreover, as Arabic-speaking countries offer cultural histories rich of rich literary, philosophical, artistic, and historical traditions, studying it introduces students to the cultural setting and richness of Middle Eastern and North African civilizations.

We have had Arabic in the HUA curriculum for three years now, and students are increasingly demanding a continued sequence for them to study the language and culture. Further, the Moroccan project center has increased in popularity since its transformation into an IQP and HUA center that also supports other grant-funded teaching and research opportunities, and the Arabic classes prepare eager students for this project center. As the Moroccan project center continues to grow, we anticipate demand for Arabic will as well. We are unable to predict all the ways in which this project center will evolve; however, we can point to a current MQP student working on a Moroccan-based project.

The purpose of this course sequence is to add Intermediate Arabic to WPI's curriculum in order to allow our students taking first year Arabic to continue in their language studies. Students who finish the sequence will reach advanced intermediate level of language competency.

Resource Requirement:

- 1) If this sequence becomes permanent, it will become part of regular annual offerings (Category I). Prof. Brahimi, the current instructor of first-year Arabic, is expected to teach the course. Any smart classroom on campus will serve the purposes of this class.
- 2) The previous offerings of first year Arabic show that current classrooms are sufficient in terms of size and technology.

Assessment: The course will be evaluated by assessing the conversational competence of the students who pass the course. Student feedback will be gathered by using WPI's course evaluations, with particular attention being paid to questions 1, 2, 9, and 26.

Impact: This course sequence will allow us to add an Arabic language track for the HUA requirement, similar to the Spanish, German, and Chinese tracks, as well as increase opportunities for students who want to pursue Middle Eastern and North African area studies at WPI.

Students taking all 6 Arabic courses who reach at least the level of AB 230X (the 6th course in the Arabic language sequence) can take AB 230X as their 6th course in HUA, thereby fulfilling their HUA Requirement through an Arabic language track practicum.

This sequence of intermediate Arabic language classes will benefit students who want to achieve Arabic language proficiency along with their STEM fields, students interested in project work in Morocco or other Arabic-speaking countries, and students interested in International Studies at WPI.

Addendum: Student Course Report Data for Experimental Arabic Courses

The following table reports the results of the standard assessment questions for the offerings of the experimental versions of the Arabic courses covered since 2017.

	<i>Count</i>	<i>Q1</i>	<i>Q2</i>	<i>Q7</i>	<i>Q19</i>
Overall	83	4.52	4.49	3.94	2.03
201602_D					
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201701_B					
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201702_D					
AB 210X INTERMEDIATE ARABIC I	4	5.00	5.00	4.25	2.00
201801_A					
AB 220X INTERMEDIATE ARABIC II	7	5.00	4.86	4.14	2.00
201801_B					
AB 230X INTERMEDIATE ARABIC III	5	5.00	5.00	4.40	2.00
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AB 210X INTERMEDIATE ARABIC I	13	4.38	4.23	3.92	2.08
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201901_B					
AB 230X INTERMEDIATE ARABIC III	10	4.60	4.50	3.80	2.25
201902_D					
AB 210X INTERMEDIATE ARABIC I	8	4.13	4.50	3.63	2.00
202001_A					
AB 220X INTERMEDIATE ARABIC II	6	4.33	4.50	3.67	2.00
202001_B					
AB 230X INTERMEDIATE ARABIC III	5	4.20	4.20	3.60	2.00

To: WPI Faculty

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

Re: Motion to add *Intermediate Arabic III, AB2533*, approved by the Department of Humanities and Arts on 11-06-2020

Motion: The Committee on Academic Operation recommends, and I move, that *Intermediate Arabic III, AB2533* as described below be added.

Course/Catalog Description: AB2533, Intermediate Arabic III, Category I.

This course is a continuation of AB 2531 and AB 2532; it focuses on improving students' skills in Modern Standard Arabic (MSA). The course employs a student-centered approach that focuses on receptive language skills (reading and listening) and productive language skills (speaking and writing); it also integrates culture and authentic materials in order to create real-life opportunities for language practice/use and to develop students' cultural competency. By the end of this course, students should be able to read and understand selected authentic texts written in MSA, differentiate between main ideas and supporting ideas, answer level-appropriate comprehension questions, respond to level-appropriate open-ended questions in MSA and generate content that is level adequate. Course assignments include daily homework, short quizzes, skits, presentations and/or an oral exam.

Students cannot receive credit for both AB 230X and AB 2533.

Recommended Background: AB1531, AB1532, AB1533, AB2531 & AB2532 or instructor approval; *this course is closed to native speakers of Arabic and heritage speakers except with written permission from the instructor.*

Anticipated instructor: Prof. Mohammed El Hamzaoui (a change from previous instructor)

Rationale: This course will replace a previous experimental Intermediate Arabic course (see attached course proposal) that was taught once each year in the last five academic years (2015-2016 through 2019-2020) but that was never transitioned into a permanent course by the previous instructor. See attached addendum for enrollment data, 2017-2020. Our reasons for wanting to make this a permanent course are multiple: 1) It functions as part of a 6-course Arabic sequence that includes elementary- and intermediate-level courses (AB 1531, AB 1532, AB 1533, AB 2531, AB 2532, AB 2533) and that mirrors our other language sequences in Chinese, German, and Spanish. 2) A 6-course sequence will allow students to complete their HUA requirement in Arabic, as they are able to do in Chinese, German, and Spanish. 3) It offers students with an interest in the Middle East and North Africa an opportunity to take language courses as part of their HUA requirement and then complete their IQP project at the Morocco Project Center. HUA is working with the Global Experience Office (GEO) to implement a process by which students with a demonstrated interest in one of our regional hubs (as China and Latin America) can complete related HUA coursework and then undertake their IQP in the region. 4) Once students have completed their HUA requirement in Arabic, they can then complete a minor in Arabic or MENA (Middle East and North Africa) Studies at our Morocco HUA Project Center, as three students did in C-term 2020. 5) It contributes to the Provost's strategic commitment to the MENA region and dovetails HUA's work to institutionalize a

MENA Hub that will work alongside the China Hub and the Latin American and Caribbean Studies (LACS). Beyond these enumerated reasons, HUA is interested in transitioning what has been an experimental course into a permanent course for more practical reasons: as a permanent course, it will appear in the course catalog, yielding far more visibility to students and advisors. The Arabic course sequence has experienced low enrollment throughout its existence in part because the information on Arabic in the current catalog does not indicate that a student can complete their HUA requirement in Arabic. As such, faculty advisors tend to suggest that students use it only to fulfill their HUA breadth requirement, meaning that students will only take the first 2 Arabic courses (AB 1531 and 1532). This was the case with the ROTC program, where multiple cadets have recently reported that they didn't enroll in intermediate-level Arabic courses because they couldn't find them listed in the course catalog. We've since had conversations with ROTC leadership, and they're enthusiastic about cadets' involvement in the Arabic program, including the 6-course Arabic sequence and a subsequent minor at the Morocco HUA Project Center.

Implementation date: AY2020-2021

Resource Requirement:

- a) What currently available resources will be needed: A classroom.
- b) What new resources will be needed: No new resources will be required.

Proposal for Experimental Course

To: Committee Chair, Committee on Academic Operations

From: Kris Boudreau, Department of Humanities and Arts

Re: Motion for Experimental Course Sequence for Second Year Arabic, AB 210X, AB 220X, and AB 230X

Date: April 9, 2015

The Department of Humanities and Arts requests the approval of the following three experimental courses: Arabic (AB), AB 210X, AB 220X, and AB 230X (Intermediate Arabic I, II, III,) in Academic Years 2015-16 and 2015-16 during D, A, and B terms.

Contact: Prof. Jennifer deWinter and Prof. Bland Addison

Preferred term: D, A, B,

Expected enrollment: up to 25 in each class; realistically, we expect 12-18 students

Course type: If it becomes permanent, Category I.

Intended audience: These courses are intended for WPI students interested in acquiring linguistic and cultural competency in Arabic and Middle Eastern/North African cultures. The audience is potentially all students who take the first year Arabic sequence, as well as students with the equivalent background in Arabic. *These courses are not open to native or heritage speakers of Arabic, unless by written approval of the instructor.*

Anticipated Instructor: Prof. Brahimi or a part-time instructor not yet identified.

Course/Catalog Description:**AB 210X, Intermediate Arabic I**

This course will build on advanced beginning Arabic conversational patterns. Class time will focus on dialogue and mastery of grammatical constructions with increased emphasis on writing and reading. Conversational drills, audio recordings, video, and group interaction will enhance classroom learning. Not open to native or heritage speakers without written permission of instructor. Recommended background: AB 1533 Beginning Arabic III

AB 220X, Intermediate Arabic II

This course will build on advanced beginning and intermediate Arabic conversational patterns. Class time will focus on dialogue and mastery of grammatical constructions, with increased emphasis on reading and writing. Conversational drills, audio recordings, video, and group interaction will enhance classroom learning. Not open to native or heritage speakers without written permission of instructor. Recommended background: AB 210X Intermediate Arabic I

AB 230X, Intermediate Arabic III

This course continues to build on students' advanced beginning Arabic conversational skills with a focus on dialogue and mastery of grammatical constructions. Increasing emphasis on reading and writing will supplement classroom activities. Conversational drills, audio recordings, video, and group interaction will enhance classroom learning. Not open to native or heritage speakers without written permission of instructor. Recommended background: AB 220X Intermediate Arabic II

Rationale: Arabic languages are spoken by a number of countries in the Middle East and Northern Africa. Arabic-speaking nations are important to understand because they are important to the United States in areas ranging from national security, foreign relations, and trade to climate change policy. Moreover, as Arabic-speaking countries offer cultural histories rich of rich literary, philosophical, artistic, and historical traditions, studying it introduces students to the cultural setting and richness of Middle Eastern and North African civilizations.

We have had Arabic in the HUA curriculum for three years now, and students are increasingly demanding a continued sequence for them to study the language and culture. Further, the Moroccan project center has increased in popularity since its transformation into an IQP and HUA center that also supports other grant-funded teaching and research opportunities, and the Arabic classes prepare eager students for this project center. As the Moroccan project center continues to grow, we anticipate demand for Arabic will as well. We are unable to predict all the ways in which this project center will evolve; however, we can point to a current MQP student working on a Moroccan-based project.

The purpose of this course sequence is to add Intermediate Arabic to WPI's curriculum in order to allow our students taking first year Arabic to continue in their language studies. Students who finish the sequence will reach advanced intermediate level of language competency.

Resource Requirement:

- 1) If this sequence becomes permanent, it will become part of regular annual offerings (Category I). Prof. Brahimi, the current instructor of first-year Arabic, is expected to teach the course. Any smart classroom on campus will serve the purposes of this class.
- 2) The previous offerings of first year Arabic show that current classrooms are sufficient in terms of size and technology.

Assessment: The course will be evaluated by assessing the conversational competence of the students who pass the course. Student feedback will be gathered by using WPI's course evaluations, with particular attention being paid to questions 1, 2, 9, and 26.

Impact: This course sequence will allow us to add an Arabic language track for the HUA requirement, similar to the Spanish, German, and Chinese tracks, as well as increase opportunities for students who want to pursue Middle Eastern and North African area studies at WPI.

Students taking all 6 Arabic courses who reach at least the level of AB 230X (the 6th course in the Arabic language sequence) can take AB 230X as their 6th course in HUA, thereby fulfilling their HUA Requirement through an Arabic language track practicum.

This sequence of intermediate Arabic language classes will benefit students who want to achieve Arabic language proficiency along with their STEM fields, students interested in project work in Morocco or other Arabic-speaking countries, and students interested in International Studies at WPI.

Addendum: Student Course Report Data for Experimental Arabic Courses

The following table reports the results of the standard assessment questions for the offerings of the experimental versions of the Arabic courses covered since 2017.

	<i>Count</i>	<i>Q1</i>	<i>Q2</i>	<i>Q7</i>	<i>Q19</i>
Overall	83	4.52	4.49	3.94	2.03
201602_D					
AB 210X INTERMEDIATE ARABIC I	7	4.57	4.29	4.14	1.71
201701_A					
AB 220X INTERMEDIATE ARABIC II	3	4.33	4.33	4.67	2.00
201701_B					
AB 230X INTERMEDIATE ARABIC III	4	5.00	5.00	4.75	1.75
201702_D					
AB 210X INTERMEDIATE ARABIC I	4	5.00	5.00	4.25	2.00
201801_A					
AB 220X INTERMEDIATE ARABIC II	7	5.00	4.86	4.14	2.00
201801_B					
AB 230X INTERMEDIATE ARABIC III	5	5.00	5.00	4.40	2.00
201802_D					
AB 210X INTERMEDIATE ARABIC I	13	4.38	4.23	3.92	2.08
201901_A					
AB 220X INTERMEDIATE ARABIC II	10	4.30	4.40	3.60	2.22
201901_B					
AB 230X INTERMEDIATE ARABIC III	10	4.60	4.50	3.80	2.25
201902_D					
AB 210X INTERMEDIATE ARABIC I	8	4.13	4.50	3.63	2.00
202001_A					
AB 220X INTERMEDIATE ARABIC II	6	4.33	4.50	3.67	2.00
202001_B					
AB 230X INTERMEDIATE ARABIC III	5	4.20	4.20	3.60	2.00

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to add HI 2900 Topics in Gender and History approved by the Humanities and Arts Department on November 20, 2020.

Motion: The Committee on Academic Operation recommends, and I move, that HI 2900 Topics in Gender and History, as described below, be added.

Contact: Kelly Colvin

Course/Catalog Description:

HI 2900. Topics in Gender and History. Cat. II

This seminar course examines topics related to gender and history. It seeks to examine gender-related theories and analytical concepts in the context of the historical periods and social movements from which contemporary ideas about gender emerge. Specific themes and topics will vary by section and instructor, and may include: gender and war, cultural history of gender, gender and intersectionality, gender and colonialism/decolonization, issues of sexuality, women's history, and issues of masculinity, among others. No prior background is required. This course may be repeated for different topics.

Anticipated Instructors: Kelly Colvin, Lindsay Davis, Joseph Cullon, Holger Droessler, Huili Zheng

Rationale:

WPI is developing a robust minor in Gender, Sexuality, and Women's Studies (GSWS). New courses have been developed in response to conversations with students and an increase in the number of students pursuing GSWS topics as an area of depth in the HUA Requirement or completing individually designed minors in GSWS. This course will contribute to the GSWS program in significant ways by enabling students to interrogate how gender has functioned as a historical category. It builds upon the important work that faculty have already undertaken to develop courses in GSWS such as HU 1500, HU 2501, and HU 2502, where students are introduced to interdisciplinary approaches the study of GSWS. In this history course, students will delve more deeply into the methods, theories, and rationales that historians use to understand contemporary and historical issues related to gender across a variety of topics and historical time periods. The course will enrich opportunities for students to study gender through completion of the Humanities and Arts Requirement and minors such as International and Global Studies or the individually designed minor in GSWS. In concert with related GSWS courses, the course on topics in gender and history meets a significant need in the WPI curriculum.

The intended audience for this course includes:

- Students with an interest in Gender, Sexuality, and Women's Studies
- Students completing the HUA Requirement
- Students interested in an Individually Designed Minor in gender, sexuality, and women's studies
- Students departing for or returning from HUA or IQP global project experiences

In addition, this course is an important step toward providing an academic space for WPI's growing population of female, non-binary, and minority students as well as broadening the educational offerings for other students. This course offers an explicit way in which to decenter white, male experience and scholarship by applying a diverse set of approaches to scholarship as well as highlighting new historical voices.

Finally, this course supports WPI's commitment in its Strategic Plan to develop a "strong, inclusive community" and cultivates classroom experiences that practice and prioritize a "diversity of thought, culture, and perspective." We anticipate that this course may also incorporate geographical/transregional diversity depending on the topics addressed, furthering WPI's vision of becoming a more globally oriented institution.

Implementation Date: Academic year 2021-22.

Resource Needs: No new resources are required. The department already has several full-time faculty with teaching and research interests appropriate for this course. Classroom needs are typical for HUA courses. No special information technology is required. Library resources are adequate to offer this introductory course. The expected enrollment is 20, and the course type is Lecture/Discussion.

Impact on Distribution Requirements and Other Courses: No impact on existing distribution requirements.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to add *MU 2510: Music in Time of Conflict*, as approved by Department of Humanities and Arts on 02/05/2021.

Motion: The Committee on Academic Operation recommends, and I move,, that *MU 2510: Music in Time of Conflict* as described below, be added.

Course/Catalog Description:

MU 2510: Music in Time of Conflict, Cat.II

This course will use music as a device to examine issues such as war, racial discrimination, refugee / homelessness, rehabilitation, and personal suffering. Works to be examined may include: Benjamin Britten's *War Requiem* and Ralph Vaughan Williams' *Dona Nobis Pacem* – critique and reactions to the World Wars; James MacMillan's *Cantos Sagrados* – a work highlighting the tragedies of political repression in Latin America; and Joel Thompson's *Seven Last Words of the Unarmed* – a piece of social justice that humanizes the black men who were unarmed, yet killed by authority figures. Along with the music, there may also be discussion of individual artists who have been outspoken about social issues, such as Leonard Bernstein in the 1960s, Dimitri Shostakovich under Stalin's rule, and contemporary pop and jazz artists.

Recommended background: Basic knowledge of reading music, such as personal experience, participation in ensembles, or music courses (MU 1611: Fundamentals of Music I, or MU 1511: Introduction to Music).

Anticipated Instructor: Professor Joshua W. Rohde

Rationale: Music has the potential to be one of the most direct forms of expression we have as individuals and a community. The purpose of this course is to examine the context and reason for which this music was developed, how we can personally relate to the music, and why it is continually important for us to perform such music today.

The novelty of this class, compared to other music history courses currently offered, is that this class will have a direct humanist emphasis and work to pair with ongoing performances of such music – both on campus and throughout the community.

This course would be applicable to any students pursuing their depth in music or fulfilling the breadth for the HUA Requirement. Students from other areas could also take this course as a free elective. This 2000-level course provides diversity amongst previously existing offerings, fulfilling a need within the MU curriculum. Expected enrollment for the course is 35 students.

Summary from previously offered experimental course:

1. Student feedback from course evaluations.

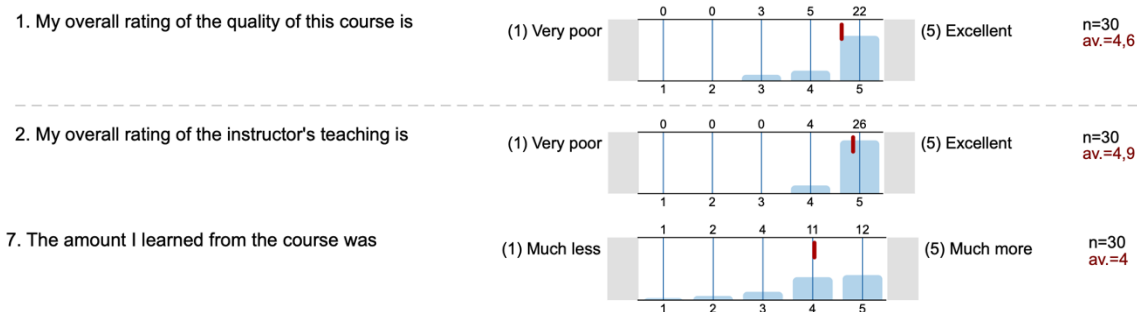
- I liked the workload - it encouraged deep, honest thought without being busywork. I would call a good portion of it emotional labor but that was something I felt I needed. I liked the involvement of the student community - our input was encouraged and necessary, and it created a comfortable atmosphere that honesty was a part of. I like the subject material - it was well-thought out and our explorations of those works were diverse and varied. I liked the variety of works that we looked at, and I liked the interactive/guest speaker elements - they provided a new perspective that I think was necessary to our engagement with the content we were looking at.
- I really liked that the course didn't just focus on learning some basic theory or anything that was really tangible. It was a lot more discussion based which made the course a lot more fun and engaging than other courses. I also thought that this course was very unique in that I've never taken a course like this before. I especially liked the guest lecturers which came in a few times. The instructor was also clear and set expectations early on which was very good.
- It expanded my worldview and allowed me to form more connections with music and its applications.
- It took me out of my comfort zone a few times which I actually learned a lot about the lesson and myself.

Would you encourage a friend to take a course from this instructor? Why or why not?

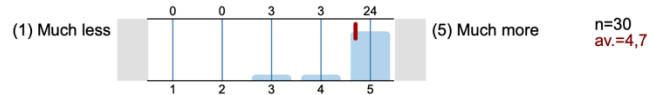
- Absolutely!
- Absolutely, I wish I could take all of my classes with Professor Rohde. He is super nice and honestly an inspiration.
- Absolutely. Musical background recommended though.
- Definitely, it was a fun class where the professor really got to know his students. The work was not extremely difficult and increased my interest in the MU courses.
- I already have recommended the class to my friends. It is engaging and educational and provides a new perspective on music and history.
- I would 100% recommend Professor Rohde to a friend, he's very good at explaining topics and encouraging positive discussion of serious and/or negative topics. Additionally, he goes above and beyond to help students who are struggling to keep up.
- I would encourage a friend to take this course. It taught very relevant topics and tied it with music. I love music. I love relevance. It was a very good course.
- I would encourage someone to take the course who has an interest in music or has had formal music education in the past (band/choir participation). I have had a prior musical background and this course increased my affinity for music, different types of music, and has allowed me to understand music better and how it impacts/reflects onto our culture.
- Yes
- Yes I would recommend taking this class, I did learn a lot
- Yes definitely, this class was amazing and all the course work done informative and interesting
- Yes! The instructor is very friendly and offers great insight into the topics. I was never bored and enjoyed almost all of the material.
- Yes! This was a great course and I can't imagine any of Professor Rohde's courses being anything but great!
- Yes, The Professor cares a lot about the subjects and how the students do in the course and their involvement

2. Outcomes from course evaluation questions.

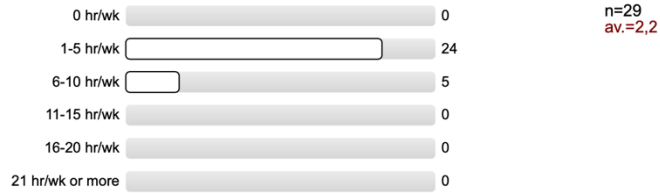
B Term 2018:



9. The instructor's personal interest in helping students learn was

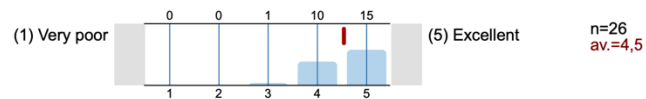


19. On average, what were the total hours spent in each 7-day week OUTSIDE of formally scheduled class time in work related to this course (including studying, reading, writing, homework, rehearsal, etc.)?

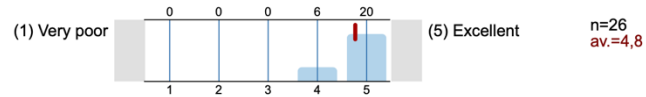


B Term 2019:

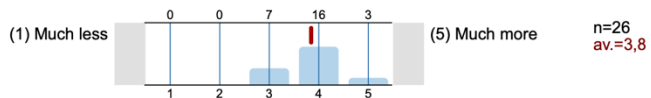
1. My overall rating of the quality of this course is



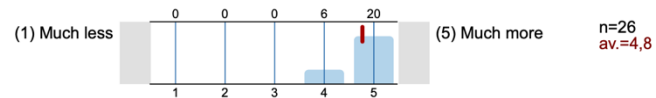
2. My overall rating of the instructor's teaching is



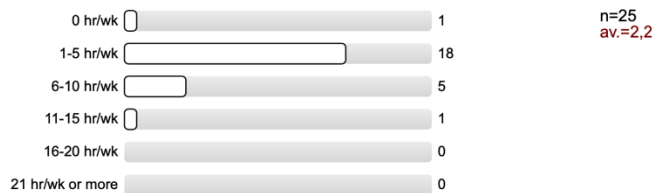
7. The amount I learned from the course was



9. The instructor's personal interest in helping students learn was



19. On average, what were the total hours spent in each 7-day week OUTSIDE of formally scheduled class time in work related to this course (including studying, reading, writing, homework, rehearsal, etc.)?



3. Instructor feedback and reflections from experimental offerings if applicable.

This course strove to meet many of the Humanities and Arts learning objectives and goals as listed below.

- to introduce students to the breadth, diversity, and creativity of human experience as expressed in the humanities and arts;
- to develop students' ability to think critically and independently about the world;
- to enhance students' ability to communicate effectively with others in a spirit of openness and cooperation;
- to enrich students' understanding of themselves;
- to encourage students to reflect on their responsibilities to others in local, national and global communities;

The diversity and creativity of the human experience was a daily focus of this course, by highlighting music from many cultures and situations. The biggest area of development in the two offerings of the experimental course was my understanding, as an instructor, of how to best present these wide-ranging topics in a way that spurred critical discussion amongst the students. Then to be able to turn this critical discussion of an external situation into one of personal reflection and understanding for the students themselves.

4. Population numbers.

B Term 2018: 35 students

B Term 2019: 37 students

Implementation Date: 2021-2022 Academic year.

Resource Needs: No new resources are required. Professor Joshua W. Rohde is full-time faculty and will teach this course. He previously taught both sections of this course as an experimental offering, so there will be no impact to his teaching load. The course will be held in Alden Hall's "Janet Earle Room," Room B06. No laboratory or special information technology is required. No additional library support or resources are needed outside of standard required reading. Expected enrollment is 35 for this Lecture/Discussion type course.

Impact on Distribution Requirements and Other Courses: No direct impact on other courses.

The original experimental course proposal is included below:

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to add *MU 20XX: Music in Time of Conflict* approved by Humanities and Arts Department on 10/27/2017.

Motion: The Committee on Academic Operation recommends, and I move, that the following experimental course (*MU 20XX: Music in Time of Conflict*) in Academic Years 2018-2019 and 2019-2020 during B terms be approved.

Contact: Dr. Joshua W. Rohde

Preferred term: Term B

Expected enrollment: 35

Course type: Lecture / discussion

Intended audience: Any students pursuing their depth requirement for HUA in music or breadth requirement in HUA. Students from other areas could also take this course as a free elective.

Anticipated Instructor: Dr. Joshua W. Rohde

Course/Catalog Description: *MU 20XX: Music in Time of Conflict*, Cat. I

This course will focus on music that has been composed during, or in response to, war and societal conflicts. Music will be used as a tool and device to examine issues such as wars, genocide, assassinations, religious persecution, refugee/homelessness, and personal suffering. Works to be examined may include: Benjamin Britten's *War Requiem* and Olivier Messiaen's *Quartet for the End of Time* – a critique and reaction of World War II; David Lang's *Little Match Girl Passion* – an expression of abuse and homelessness; and James MacMillan's *Cantos Sagrados* – a work highlighting the tragedies of political repression in Latin America. Along with the music, there may also be discussion of individual artists who have been outspoken about social issues, such as Leonard Bernstein in the 1960s, Dimitri Shostakovich under Stalin's rule, and contemporary pop and jazz artists.

Recommended background: Basic knowledge of reading music, such as personal experience, participating in ensembles, or music courses (MU 1611: Fundamentals of Music I, or MU 1511: Introduction to Music).

Rationale: Music has the potential to be one of the most direct forms of expression we have as individuals and a community. The purpose of this course is to examine the context and reason for which this music was developed, how we can relate to the music, and why it is continually important for us to perform such music today.

The novelty of this class, compared to other music history courses currently offered, is that this class will have a direct humanist emphasis and work to pair with ongoing performances of such music – both on campus and throughout the community.

Resource Needs:

Please summarize basic resources needed to deliver this course:

- No new additional resources will be needed.
- Instructor: Prof. Joshua W. Rohde will teach *MU 20XX: Music in Time of Conflict* instead of a second section of previously scheduled *MU 2611: Fundamentals of Music II*, so that his teaching load will remain the same and no additional faculty hires are needed. To note, the first section of *MU 2611: Fundamentals of Music II* will continue to be taught by another faculty member.
- Classroom: The course will be held in Alden Hall's "Janet Earle Room," Room B06.
- Library resources: No additional library support or resources outside of standard required reading.

Assessment: The course will be assessed through student course evaluations, instructor feedback and reflections, and discussions with the other music faculty members.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Academic Operations (Prof. Mathisen, Chair)
Re: Motion to add *MU 2639: String Quartet* approved by Department of Humanities and Arts on 02/05/2021.

Motion: The Committee on Academic Operation recommends, and I move, that *MU 2639: String Quartet* as described below, be added as a Music Ensemble.

Music Ensemble/Catalog Description:

MU 2639: String Quartet, Cat.I

The String Quartet is an audition-based, select ensemble. Members are required to also participate in Orchestra. The quartet meets weekly and performs both on campus and on tour. Students are expected to be of the highest caliber of string players and know how to read music. Permission of the instructor is necessary to register.

Recommended background: n/a

Anticipated Instructor: Director of Orchestral Activities

Rationale: The String Quartet has existed as an honors ensemble for over twenty years, previously functioning as an extra-curricular student activity. The purpose of this proposal is to validate the rigor of the ensemble's work and create a way to keep formal record of enrollment. Instituting the String Quartet as a course, aligns this it with comparable audition-based ensembles in the choir and jazz programs (*MU2638 – Chamber Choir*, *MU2634 – Jazz Ensemble*). This course would be applicable to any string player at WPI.

Enrollment cap for this course will be 999 students, as is the cap for all other music ensembles. Expected enrollment for the course is 4 to 12 students.

Implementation Date: 2021-2022 Academic year.

Resource Needs: No new resources are required. The course will be held in Alden Hall. No laboratory or special information technology is required. No additional library support or resources are needed outside of standard required reading.

Impact on Distribution Requirements and Other Courses: No direct impact on other courses.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to add TH1100 Introduction to Acting, approved by HUA on 2/05/2021

Motion: The Committee on Academic Operation recommends, and I move, that TH1100 Introduction to Acting, as described below, be added to the undergraduate catalog.

Course/Catalog Description:

TH1100. Introduction to Acting. Cat I.

This course is designed to give students fundamental tools and techniques for acting in the theatre. These include concentration, relaxation, imagination, observation, communication, sensory awareness, and basic script analysis. Drawing on the “Stanislavski Method,” and using character analysis and scene study, it will include exploration of objectives, tactics, obstacles, action, conflict, subtext, and characterization. It will do this through in-class exercises, as well as monologue and scene work from a variety of plays. Beyond acting skills, the student will learn valuable skills in public speaking and in conveying clear, complex ideas.

Recommended background: Some theatre or acting experience is desirable but the course is suitable for anyone with interest in the subject.

Anticipated Instructor: Guest artist/adjunct. Taught in 2019-20 by Olivia D’Ambrosio.

Rationale: This course responds to a need to provide instruction in theatre performance and production as an academic discipline. It complements the HUA department’s existing courses in dramatic literature and theatre technology by offering students a performance-focused course. There is robust interest in theatre among the students as demonstrated by student productions on campus each term. The students produce, direct, design, and act in productions, both plays and musicals (Masque, Vox, etc) on campus, and HUA supports the productions with technical staff and resources, but we do not currently offer any courses in basic theatre disciplines, like acting, directing, production management, and design.

What term is this course typically offered and is it Cat. I or Cat. II? A term, Cat. I

Implementation Date: 2021-22 academic year (A-term)

Resource Needs: No new resources needed. This course has been taught as an independent study by a visiting guest artist in 2020 A-term and C-term and funded with existing budget.

Classroom: The classroom must be a flexible space that accommodates both discussion and performance as well as the capacity to view video; ideal scheduling would be in a theatre space (like the Little Theatre).

Library resources: None needed.

Support from Academic Technology: Yes, in helping students film their monologues and scenes. I have spoken with staff from academic technology and was assured that this is something they support.

Impact on Distribution Requirements and Other Courses: The course will provide an additional option for students completing the HUA requirement.

Assessment: This course will be assessed via attention to enrollment demographics, instructor feedback, course reports (including data from questions 1, 2, 7 and 19), and departmental review.

A-20 (18 students)

1: 4.78

2: 4.78

7: 4.22

19: 1.94 (C-21course syllabus has been adjusted for more rigor)

Course type: lecture / discussion/ active learning

Intended audience: Students seeking breadth or depth in TH toward the HUA Requirement; Students seeking minors or majors in TH; a wide range of students looking for HUA electives, including juniors and seniors beyond the HUA requirement looking for general electives; students interested in theatre or drama; any students with an interest in acting (for example, students participating in the Vox, Masque, or faculty-directed productions).

Contact: Kate Moncrief

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to add *TH 1221. Introduction to Drama - Theatre on the Page and on the Stage*, as approved by the Humanities and Arts on 2/05/2021.

Motion: The Committee on Academic Operation recommends, and I move, that TH1221 Introduction to Drama – Theatre on the Page and on the Stage, as described below, be added to the undergraduate catalog.

New Course Title/Description:

TH1221 Introduction to Drama – Theatre on the Page and on the Stage. Cat I

This introductory course will give the student a basic understanding of theatrical productions, from the moment we read the script to the moment it is presented to an audience, and it will initiate conversations on Art, Theatre and the ways it imitates, catalogues and presents life. Every week touches upon a different area, including playwrighting, directing, acting, and designing and the course culminates in the compilation of an original monologue. This course also serves as an introduction to the WPI Theatre community, often with student involvement to the current theatre production on campus.

Students may not receive credit for EN 1221 and TH 1221

Previous Course/Catalog Description: As part of a new initiative in the HU&A department the theatre discipline is consolidating all theatre specific courses under the TH course prefix. This initiative was started due to the large and growing interest in Theatre at WPI. This consolidation will better define the requirements for Practicums, Minors and HU&A Theatre Concentrations.

This introductory course will give the student an understanding of the forms of drama, the styles of theatre performance and production, and the emergence of new forms and styles. Research and writing projects, and performance activities will offer the student experience in the theory and practice studied in the course.

Anticipated Instructor: Despoina Giapoudzi

Rationale: As part of a new initiative in the HU&A department the theatre discipline is consolidating all theatre specific courses under the TH course prefix. This initiative was started due to the large and growing interest in Theatre at WPI. This consolidation will better define the requirements for Practicums, Minors and HU&A Theatre Concentrations.

This Course has already been approved under a different course number and prefix (EN1221). This proposal contains no changes to the currently offered course except for the change the catalog number a rewrite to the course description both old and new are attached.

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

Resource Needs: No new resource will be required with this change in course prefix.

Impact on Distribution Requirements and Other Courses: There will be no new impact.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to add TH2219 *Playwriting*, as approved by the Humanities and Arts Department on November 20, 2020.

Motion: The Committee on Academic Operation recommends, and I move, that *TH 2219 Playwriting*, as described below, be added.

Course Title/Description:

TH2219. Playwriting, Category II

Playwright. Wright – a maker. She creates a world on the stage through action, dialogue, and character. In this course, students will learn to write for the theatre – to make plays – through study, discussion, and practice. Working from foundational ideas of the well-made play, it will draw upon various analytic theories of theater to examine the structure of plays. Through exercises and studio-type critique, students will create and develop their own plays.

Recommended background: No recommended background. This course is suitable for anyone with an interest in being a playwright.

Anticipated Instructor: Steve Taylor

Rationale: There is growing interest in drama and theatre as an option for students as an area of focus within the Humanities and Arts. This course will help meet that need.

Implementation Date: The course will be offered initially in fall 2021.

Resource Needs: No new resources needed.

Classroom: This course will hopefully be taught on campus, and would need a flexible space that accommodates both discussion and theater exercises. (20 students) If need be, it could be taught online.

Library resources: None needed

Support from Academic Technology: Canvas and Zoom

Impact on Distribution Requirements and Other Courses: This course will serve to meet the Humanities and Arts requirement (either depth or breadth, depending on the student). It will also count toward a minor or major in theatre as well as a free elective for anyone interested in the topic.

Assessment: This course will undergo the typical assessment procedures (instructor self-evaluation and student course evaluations, including data for Questions 1, 2, 7, and 19). The

Humanities and Arts Department will meet with the instructor after the first offering to review the success of the course in achieving its objectives.

Course type: lecture / discussion / active learning

Intended audience: First year students as well as advanced students interested in theatre.

Contact: Kate Moncrief, Department Head for Humanities and Arts

Sample Class Titles/Topics:

1: Play structure

- An interactive lecture/discussion on play structure and sample analysis of some exiting plays/movies.

Assignment: Analyze the structure of an existing play

2: Dialogue

-An interactive lecture and discussion on what makes good dialogue

Assignment: Record an actual conversation (with permission). Rewrite it into stage dialogue.

3: Character flaws and depth

-An interactive lecture/discussion on role of character flaws

Assignment: Analyze the character flaws in the lead characters in an existing play

4: Project Critique

-A live reading of selections of student scripts followed by critique and discussion

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to add *TH 2222. Introduction to Technical Theatre* approved, Humanities and Arts on 2/05/2021.

Motion: The Committee on Academic Operation recommends, and I move, that *TH 2222. Introduction to Technical Theatre*, as described below, be added.

Course Title/Description:

TH 2222. Introduction to Technical Theatre, Cat I

This course introduces students to a variety of technical theatre disciplines, including scenic, lights, sound, props, costumes and more. Each week, students will focus on different technical elements through a combination of lectures, demonstrations, and hands on workshops. Students will demonstrate their learning through various projects and involvement in the current term production.

Students may not receive credit for EN 2222 and TH 2222

Anticipated Instructor: Patrick Crowe

Rationale: As part of a new initiative in the HU&A department the theatre discipline is consolidating all theatre specific courses under the TH course prefix. This initiative was started due to the large and growing interest in Theatre at WPI. This consolidation will better define the requirements for Practicums, Minors and HU&A Theatre Concentrations.

This Course has already been approved under a different course number and prefix (EN2222). EN 2222 is being dropped from the catalog and the course reassigned to TH. This proposal contains no changes to the currently offered course except for the change the catalog number.

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

Resource Needs: No new resource will be required with this change in course prefix.

Impact on Distribution Requirements and Other Courses: There will be no new impact.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to add *TH3220. Shakespeare in Performance*, approved by Humanities and Arts on 2/05/2021

Motion: The Committee on Academic Operation recommends, and I move, that *TH3220. Shakespeare in Performance* as described below, be added to the catalog.

Course Title/Description:

TH3220. Shakespeare in Performance, Cat. II

This course examines a selection of Shakespeare's plays, specifically addressing issues of performance. We will approach the plays through close reading; in relationship to the historical, cultural, and theatrical context in which they were written and originally produced; through viewing and analysis (film and live performance); and as they have been and can be interpreted for performance. We will explore the relationship between text and performance in a practical way with performance exercises and staging scenes from the plays. We will also consider how production elements (design elements including setting and costumes, casting, direction and performance choices, etc.) create and convey meaning and shape audience response. This course will be offered in 2020-21, and in alternating years thereafter. Recommended background: Some familiarity with Shakespeare and or/theatre but the course is suitable for anyone with interest in the subject.

Students may not receive credit for EN 3225 and TH 3220

Anticipated Instructor: Kathryn Moncrief

Rationale: As part of a new initiative in the HU&A department the theatre discipline is consolidating all theatre specific courses under the TH course prefix. This initiative was started due to the large and growing interest in Theatre at WPI. This consolidation will better define the requirements for Practicum, Minors and HU&A Theatre Concentrations.

This Course has already been approved under a different course number and prefix (EN3225).

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

Resource Needs: No new resource will be required with this change in course prefix.

Impact on Distribution Requirements and Other Courses: There will be no new impact.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to cross-list PY 3711, Topics in Philosophy, approved by Department of Humanities and Arts on 02/05/2021

Motion: The Committee on Academic Operation recommends, and I move, that PY 3711 Topics in Philosophy be cross-listed such that the course number is PY/RE 3711.

Existing title, description and course offering schedule:

PY 3711 Topics in Philosophy (Cat. I)

This course is organized around an advanced or specialized topic in philosophy and provides preparation for HU 3900 Inquiry Seminars in philosophy and religion. Emphasis on topics and authors will vary with instructor, but will typically involve the study of: a particular philosopher (e.g., Plato, Marx, Dewey, Arendt); a particular philosophical tradition (e.g., Pragmatism, Analytic Philosophy, Buddhism, Feminism); a particular philosophical problem or topic (free will, globalization, consciousness, social movement, justice); or a particular philosophical classic (Aristotle's *Ethics*, Hobbes's *The Leviathan*, Beauvoir's *The Second Sex*). The topical theme of the course will be provided as a modified course title in the course description posted online. Recommended Background: None.

Proposed title, description and course offering schedule:

PY/RE 3711 Topics in Philosophy (Cat. I)

This course is organized around an advanced or specialized topic in philosophy and provides preparation for HU 3900 Inquiry Seminars in philosophy and religion. Emphasis on topics and authors will vary with instructor, but will typically involve the study of: a particular philosopher (e.g., Plato, Marx, Dewey, Arendt); a particular philosophical tradition (e.g., Pragmatism, Analytic Philosophy, Buddhism, Feminism); a particular philosophical problem or topic (free will, globalization, consciousness, social movement, justice); or a particular philosophical classic (Aristotle's *Ethics*, Hobbes's *The Leviathan*, Beauvoir's *The Second Sex*). The topical theme of the course will be provided as a modified course title in the course description posted online. Recommended Background: None.

Explanation of Motion: It is an oversight that students wishing to do their depth or otherwise concentrate in religious studies would not be able to receive RE credit for a 3000-level class in philosophy and religion. The philosophy and religion programs are integrated at WPI, and each professor provides opportunity for study in both areas in all courses. This is especially the case in advanced classes where the student generally has more freedom to choose topics of study.

Rationale: We generally only offer one Topics course per term, so we believe that the failure to cross-list our Topics courses may be preventing students from advanced study in PY/RE and hindering enrollment in 3000-level courses. The current course description already specifies that the course is preparation for the HU 3900 Inquiry seminars in philosophy and religion. At the level of the Inquiry seminars, any student who has a depth in either philosophy or religion may

take any Inquiry seminar in PY or RE. We should therefore be consistent with this practice and cross-list our 3000-level courses, which provide preparation for the Inquiry seminar in both disciplines. This change will not affect the distribution requirements in the Humanities & Arts department.

Impacts on students: We believe that cross-listing the course description will encourage more students to take PY 3711 as their third philosophy and religion course to fulfill their Humanities & Arts requirement, which will likely render them better prepared to complete their Inquiry Seminar in philosophy and religion. This should give students more options to complete their HUA and PY/RE requirements than before.

Resource Requirements: An instructor and a classroom for 20 students. No new resources are needed.

Implementation Date: As soon as possible in the next catalog iteration, 2021-2022.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to cross-list RE 3721, Topics in Religion approved by Department of Humanities and Arts on 02/05/2021

Motion: The Committee on Academic Operation recommends, and I move, that RE 3721 Topics in Religion be cross-listed such that the course number is PY/RE 3721.

Existing title, description and course offering schedule:

RE 3721 Topics in Religion (Cat. I)

This course is organized around an advanced or specialized topic in religion and provides preparation for HU 3900 Inquiry Seminars in philosophy and religion. The focus will vary, but the material will be drawn from a particular religious thinker, a particular religious tradition, or a particular contemporary or historical problem. The topic of the class will be provided as a modified course title in the course description posted online.

Recommended Background: None.

Proposed title, description and course offering schedule:

PY/RE 3721 Topics in Religion (Cat. I)

This course is organized around an advanced or specialized topic in religion and provides preparation for HU 3900 Inquiry Seminars in philosophy and religion. The focus will vary, but the material will be drawn from a particular religious thinker, a particular religious tradition, or a particular contemporary or historical problem. The topic of the class will be provided as a modified course title in the course description posted online.

Recommended Background: None.

Explanation of Motion: It is an oversight that students wishing to do their depth or otherwise concentrate in philosophy would not be able to receive PY credit for a 3000-level class in philosophy and religion. The philosophy and religion programs are integrated at WPI, and each professor provides opportunity for study in both areas in all courses. This is especially the case in advanced classes where the student generally has more freedom to choose topics of study.

Rationale: We generally only offer one Topics course per term, so we believe that the failure to cross-list our Topics courses may be preventing students from advanced study in PY/RE and hindering enrollment in 3000-level courses. The current course description already specifies that the course is preparation for the HU 3900 Inquiry seminars in philosophy and religion. At the level of the Inquiry seminars, any student who has a depth in either philosophy or religion may take any Inquiry seminar in PY or RE. We should therefore be consistent with this practice and cross-list our 3000-level courses, which provide preparation for the Inquiry seminar in both disciplines. This change will not affect the distribution requirements in the Humanities & Arts department.

Impacts on students: We believe that cross-listing the course description will encourage more students to take RE 3721 as their third philosophy and religion course to fulfill their Humanities & Arts requirement, which will likely render them better prepared to complete their Inquiry Seminar in philosophy and religion. This should give students more options to complete their HUA and PY/RE requirements than before.

Resource Requirements: An instructor and a classroom for 20 students. No new resources are needed.

Implementation Date: As soon as possible in the next catalog iteration, 2021-2022.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to remove *EN 1221. Introduction to Drama: Theatre on the Page and on the Stage* from the undergraduate catalog, approved by Humanities and Arts Department on 2/05/2021.

Motion: The Committee on Academic Operation recommends, and I move, that EN1221 *Introduction to Drama: Theater on the Page and on the Stage*, be removed from the undergraduate catalog.

Title and description for course to be removed:

EN1221. Introduction to Drama. Cat I.

This introductory course will give the student an understanding of the forms of drama, the styles of theatre performance and production, and the emergence of new forms and styles. Research and writing projects, and performance activities will offer the student experience in the theory and practice studied in the course.

Rationale: As part of a new initiative in the HU&A department the theatre discipline is consolidating all theatre specific courses under the TH course prefix. This initiative was started due to the large and growing interest in Theatre at WPI. This consolidation will better define the requirements for Practicums, Minors and HU&A Theatre Concentrations.

This course will be replaced with one under the same name (*Introduction to Drama: Theatre on the Page and on the Stage*) and the new course number TH1221.

This course is typically held each year (Cat I) in A-Term and its replacement will follow the same schedule.

There will be no impact to students both current and future. There are no changes to required resources for this course or its replacement.

Note changes to catalog: A theatre section under Humanities and Arts courses section (page 161) will need to be created. Additional small changes will be required around course numbers that are listed in other sections.

Impact on Distribution Requirements and Other Courses: There will be no impact to other courses.

Implementation Date: Implementation date for this action is the 2021-22 Academic year.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to remove *EN 2222. Introduction to Technical Theatre* from the undergraduate catalog, approved by Humanities and Arts Department on 2/05/2021.

Motion: The Committee on Academic Operation recommends, and I move, that *EN 2222. Introduction to Technical Theatre*, be removed from the undergraduate catalog.

Title and description of course to be removed:

EN 2222. Introduction to Technical Theatre, Cat I. This course introduces students to a variety of technical theatre disciplines, including scenic, lights, sound, props, costumes and more. Each week, students will focus on different technical elements through a combination of lectures, demonstrations, and hands-on workshops. Students will demonstrate their learning through various projects and involvement in the current term production.

Rationale: As part of a new initiative in the HU&A department the theatre discipline is consolidating all theatre specific courses under the TH course prefix. This initiative was started due to the large and growing interest in Theatre at WPI. This consolidation will better define the requirements for Practicums, Minors and HU&A Theatre Concentrations. This course will be replaced with one under the same name (*Introduction to Technical Theatre*) and the new course number TH2222.

This course is typically held each year (Cat I) in D-Term and its replacement will follow the same schedule.

There will be no impact to students both current and future. There are no changes to required resources for this course or its replacement.

Note changes to catalog: A theatre section under Humanities and Arts courses section (page 161) will need to be created. Additional small changes will be required around course numbers that are listed in other sections.

Impact on Distribution Requirements and Other Courses: There will be no impact to other courses.

Implementation Date: Implementation date for this action is the 2021-22 Academic year.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to remove *EN 3225. Shakespeare in Performance* from the undergraduate catalog, approved by Humanities and Arts Department on 2/05/2021.

Motion: The Committee on Academic Operation recommends, and I move, that *EN 3225 Shakespeare in Performance*, be removed from the undergraduate catalog

Title and description of Course to be Removed:

EN 3225 Shakespeare in Performance. Cat II.

This course examines a selection of Shakespeare's plays, specifically addressing issues of performance. We will approach the plays through close reading; in relationship to the historical, cultural, and theatrical context in which they were written and originally produced; through viewing and analysis (film and live performance); and as they have been and can be interpreted for performance. We will explore the relationship between text and performance in a practical way with performance exercises and staging scenes from the plays. We will also consider how production elements (design elements including setting and costumes, casting, direction and performance choices, etc.) create and convey meaning and shape audience response. This course will be offered in 2020-21, and in alternating years thereafter. Recommended background: Some familiarity with Shakespeare and or/theatre but the course is suitable for anyone with interest in the subject.

Rationale: As part of a new initiative in the HU&A department the theatre discipline is consolidating all theatre specific courses under the TH course prefix. This initiative was started due to the large and growing interest in Theatre at WPI. This consolidation will better define the requirements for Practicums, Minors and HU&A Theatre Concentrations. This course will be replaced with one under the same name (*Shakespeare in Performance*) and the new course number TH3220.

This course is typically held each year (Cat II) in B-Term and its replacement will follow the same schedule.

There will be no impact to students both current and future. There are no changes to required resources for this course or its replacement.

Note changes to catalog: A theatre section under Humanities and Arts courses section (page 161) will need to be created. Additional small changes will be required around course numbers that are listed in other sections.

Impact on Distribution Requirements and Other Courses: There will be no impact to other courses.

Implementation Date: Implementation date for this action is the 2021-22 Academic year.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to remove HI 2324. *The British Empire* from the undergraduate catalog, approved by the Humanities and Arts Department on November 20, 2020.

Motion: The Committee on Academic Operation recommends, and I move, that HI 2324 *The British Empire*, be removed from the undergraduate catalog.

Course description for course to be removed:

HI 2324. *The British Empire*. Cat. I

This course provides a survey of the British Empire from the 18th century to the present. Topics include the formation of a multinational British state; slavery, sugar, and empire; rebellion in the Americas; settlement of Australia and New Zealand; imperial expansion and resistance in India, China and Southern Africa; industrialization and global trade; cultural dimensions of the colonial experience; gender and empire; world wars and decolonization; and reconfigurations of a global Britain. Especially appropriate for students interested in projects centers located in Britain or the former British Empire. No prior knowledge required.

Rationale: This course will be replaced by new course HI 2329 *European Empires* Cat. I

Note changes to catalog: Delete HU 2324.

Impact on Distribution Requirements and Other Courses: In the 2021-22 UG catalog, this course should be deleted in lists of related or recommended courses (pp. 79, 93, 96) with the HUA, INGS, or Liberal Arts and Engineering majors. Such references should be replaced with the new course, HI 2329 *European Empires*. Students may not receive credit for both HI 2324 and HI 2329, as indicated on the proposal for the new course.

What term is this course typically offered and is it Cat. I or Cat. II? D term, Cat. I

If there is a course to replace this, which one? HI 2329 *European Empires*

Note if there are any changes to resource requirements. No changes to resource requirements

Implementation Date: Academic Year 2021-22.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Academic Operations (Prof. Mathisen, Chair)
Re: Motion to add HI 2329 *European Empires* approved by the Humanities and Arts Department on November 20, 2020.

Motion: The Committee on Academic Operation recommends, and I move, that HI 2329 *European Empires*, as described below, be added.

Course/Catalog Description:

HI 2329. *European Empires*. Cat I.

This course takes a thematic approach to the history of European empires. Units focus upon important events and moments in European imperialism and decolonization from the perspective of both the colonizers and colonized. Specific topics may include slavery and emancipation, imperial racism, the civilizing mission, religious motivations, violence, gender and empire, disease and poverty, environmental degradation, empires at war, and postcolonial legacies. Especially appropriate for students interested in projects centers located in Europe or formerly colonized areas. No prior knowledge required. Students may not receive credit for both HI 2324 and HI 2329.

Recommended background: None.

Anticipated Instructors: Professors Kelly Colvin, Peter Hansen

Rationale: This course on European empires replaces a course focused on the British empire to broaden the course content and to adapt to the changing areas of interest for instructors and students. The British Empire is included in a comparative context; as a result, students cannot receive credit for both HI 2324, which is being dropped, and this course, HI 2329. The broader range of European empires in this course will provide greater flexibility to include themes or case studies devoted to other empires (such as the French or Spanish empires) or taking a more explicitly comparative approach across several European empires. Given the global reach of European empires in places where WPI sends students in the Global Projects Program, this course will continue to contribute in significant ways to student learning in the Humanities and Arts, International and Global Studies, and the Global Projects Program.

Implementation Date: Academic Year 2021-22.

Resource Needs: No new resources are required. The department already has full-time faculty appropriate for this course. Classroom needs are typical for HUA courses. No special information technology is required. Library resources are adequate to offer this course. The expected enrollment is 50, and the course type is Lecture/Discussion.

Impact on Distribution Requirements and Other Courses: This course will continue to provide options for students completing the Humanities and Arts Requirement, several majors and minors, and programs related to development.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Academic Operations (Prof. Mathisen, Chair)
Re: Motion to change the title and description for MU 2637 approved by Department of Humanities & Arts on 02/05/2021.

Motion: The Committee on Academic Operation recommends, and I move, that the title and description for MU 2637 be changed as described below.

Existing title, description and course offering schedule:

MU 2637. STRING ENSEMBLE

Cat. I

The String Ensemble performs music for string orchestra both on campus and on tour. Members of the string ensemble also comprise the string section for the full orchestra. Rehearsals are held weekly. Students are expected to perform with the ensemble and to know how to read music.

Proposed title, description, and course offering:

MU 2637. Orchestra

Cat. I

The Orchestra performs music for both a string ensemble and full orchestra on campus and on tour. Rehearsals are held weekly. Students are expected to perform with the ensemble and to know how to read music.

Explanation of Motion:

This proposal is to change the title of “String Ensemble” to “Orchestra,” and make minor updates to the course description.

No other changes will be made to this course, such as the course offering or scheduling, beyond those listed above. Therefore, it is not necessary to propose dropping this course and adding a new one.

Rationale:

The title “String Ensemble” misrepresents the content of this course. When the course was originally created, it was named “String Ensemble” to reflect the participants. Since then, the ensemble has grown to include not merely string instruments but also wind, brass, and percussion. The title change to “Orchestra” will properly reflect the content of the course.

Impacts on students:

This change will provide clarity for students interested in the different music offerings at WPI.

Resource Needs:

No new resources are needed.

Implementation Date: 2021-22 Academic Year

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to change ME 4810 Automotive Materials and Process Design, ME 4813 Ceramics and Glasses for Engineering Applications, and ME 4832 Corrosion and Corrosion Control from Cat. II to Cat. I, approved by the Mechanical Engineering Dept. Faculty on December 8, 2020.

Motion: The Committee on Academic Operation recommends, and I move, that Courses ME 4810 Automotive Materials and Process Design, ME 4813 Ceramics and Glasses for Engineering Applications, and ME 4832 Corrosion and Corrosion Control be changed from Cat. II to Cat. I

Existing title, description and course offering schedule:

ME 4810. AUTOMOTIVE MATERIALS AND PROCESS DESIGN. Cat. II This course focuses on materials used in the automotive industry. Students complete a term-long project that integrates design, materials selection and processing considerations. Activities include: problem definition, development of design specifications, development and analysis of alternative designs, conceptual designs and materials and process selection. Students will consider cost, and environmental impact of alternative material choices. Students will present their results in intermediate and final design reviews. Recommended background: materials science (ES 2001), stress analysis (ES 2502), or equivalent. This course will be offered in 2019-20, and in alternating years thereafter.

ME 4813. CERAMICS AND GLASSES FOR ENGINEERING APPLICATIONS. Cat. II This course develops an understanding of the processing, structure, property, performance relationships in crystalline and vitreous ceramics. The topics covered include crystal structure, glassy structure, phase diagrams, microstructures, mechanical properties, optical properties, thermal properties, and materials selection for ceramic materials. In addition the methods for processing ceramics for a variety of products will be included. Recommended Background: ES 2001 or equivalent. This course will be offered in 2019-20, and in alternating years thereafter.

ME 4832. CORROSION AND CORROSION CONTROL. Cat. II An introductory course designed to acquaint the student with the different forms of corrosion and the fundamentals of oxidation and electro-chemical corrosion. Topics covered include: corrosion principles, environmental effects, metallurgical aspects, galvanic corrosion, crevice corrosion, pitting, intergranular corrosion, erosion corrosion, stress corrosion, cracking and hydrogen embrittlement, corrosion testing, corrosion prevention, oxidation and other high-temperature metal-gas reactions. Recommended background: materials (ES 2001). This course will be offered in 2019-20, and in alternating years thereafter.

Proposed title, description, and course offering:

ME 4810. AUTOMOTIVE MATERIALS AND PROCESS DESIGN. Cat. I This course focuses on materials used in the automotive industry. Students complete a term-long project that integrates design, materials selection and processing considerations. Activities include: problem

definition, development of design specifications, development and analysis of alternative designs, conceptual designs and materials and process selection. Students will consider cost, and environmental impact of alternative material choices. Students will present their results in intermediate and final design reviews. Recommended background: materials science (ES 2001), stress analysis (ES 2502), or equivalent.

ME 4813. CERAMICS AND GLASSES FOR ENGINEERING APPLICATIONS. Cat. I This course develops an understanding of the processing, structure, property, performance relationships in crystalline and vitreous ceramics. The topics covered include crystal structure, glassy structure, phase diagrams, microstructures, mechanical properties, optical properties, thermal properties, and materials selection for ceramic materials. In addition the methods for processing ceramics for a variety of products will be included. Recommended Background: ES 2001 or equivalent.

ME 4832. CORROSION AND CORROSION CONTROL. Cat. I An introductory course designed to acquaint the student with the different forms of corrosion and the fundamentals of oxidation and electro-chemical corrosion. Topics covered include: corrosion principles, environmental effects, metallurgical aspects, galvanic corrosion, crevice corrosion, pitting, intergranular corrosion, erosion corrosion, stress corrosion, cracking and hydrogen embrittlement, corrosion testing, corrosion prevention, oxidation and other high-temperature metal-gas reactions. Recommended background: materials (ES 2001).

Explanation of Motion: Courses remain the same; only change is the commitment to Cat. I.

Rationale: ME 4810 is now offered TWICE per year due to student demand; the other two have been offered annually for 5 years with sufficient enrollment. For ease in student scheduling, we want them to know these will be offered annually.

Impacts on students: The change makes it easier for students, since they know the courses will be annual. In practice, Mechanical engineering has been offering them each year.

Resource Needs:

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

There are no changes in current resources, since we have been offering these annually for some time. We have 2 or more faculty who can teach each course.

Implementation Date: This would officially change with the 2021-22 catalog, but the courses will continue to be offered at least once per year.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to change the description for RBE 2001 approved by Dept. Faculty on 5/19/2020.

Motion: The Committee on Academic Operation recommends, and I move, that the description for RBE 2001 be changed as described below.

Existing title, description and course offering schedule:

RBE 2001. UNIFIED ROBOTICS I: ACTUATION.

Cat. I.

First of a four-course sequence introducing foundational theory and practice of robotics engineering from the fields of computer science, electrical engineering and mechanical engineering . The focus of this course is the effective conversion of electrical power to mechanical power, and power transmission for purposes of locomotion, and of payload manipulation and delivery . Concepts of energy, power and kinematics will be applied . Concepts from statics such as force, moments and friction will be applied to determine power system requirements and structural requirements . Simple dynamics relating to inertia and the equations of motion of rigid bodies will be considered . Power control and modulation methods will be introduced through software control of existing embedded processors and power electronics . The necessary programming concepts and interaction with simulators and Integrated Development Environments will be introduced . Laboratory sessions consist of hands-on exercises and team projects where students design and build robots and related sub-systems .Recommended background: ES 2201/RBE 1001, ES 2501 (can be taken concurrently), ECE 2029 and PH 1120 or PH 1121.

Proposed title, description, and course offering:

RBE 2001. UNIFIED ROBOTICS I: ACTUATION.

Cat. I

First of a four-course sequence introducing foundational theory and practice of robotics engineering and the application of concepts from the fields of computer science, electrical engineering and mechanical engineering to the design of robots. The focus of this course is the effective conversion of electrical power to mechanical power, and power transmission for purposes of locomotion, and of payload manipulation and delivery. Concepts of energy, power and kinematics will be applied. Concepts from statics such as force, moments and friction will be applied to determine power system requirements and structural requirements. Simple dynamics relating to inertia and the equations of motion of rigid bodies will be considered. Power control and modulation methods will be introduced through software control of existing embedded processors and power electronics. The necessary programming concepts and interaction with simulators and Integrated Development Environments will be introduced. Laboratory sessions consist of hands-on exercises and team projects where students design and build robots and related sub-systems. Recommended background: RBE 1001, ES 2501, and either PH 1120 or PH 1121.

Explanation of Motion: The updated description reflects updates to the second-year sequence (RBE 2002 is updated in a separate motion) that better capture the objectives for the sequence.

The heart of the course remains unchanged and it retains its place in the requirements for an RBE major or minor.

Rationale: The proposed description is guided by two general principles:

1. Reinforce the notion that robotics courses should focus on the *application and integration* of fundamental material in the supporting disciplines, and
2. Better define the 200x sequence as: a course focusing on actuation (2001) and a course focusing on sensors (2002).

Impacts on students: The largest effect on students is that ECE 2029 is dropped as recommended background and ES 2501 is recommend *before* RBE 2001 (as opposed to concurrently). Between this and the related motion for RBE 2002, the impact student on schedules is minimal, as they will still have to take two courses to prepare for the RBE 200x sequence. Materials will be made available for students during the transition of the courses so that they are not burdened with taking an extra course.

Resource Needs:

Unchanged

Implementation Date: 2021-2022 Academic year.

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to change the description for RBE 2002 approved by Dept. Faculty on 5/19/2020.

Motion: The Committee on Academic Operation recommends, and I move, that the description for RBE 2002 be changed as described below.

Existing title, description and course offering schedule:

RBE 2002. UNIFIED ROBOTICS II: SENSING.

Cat. I

Second of a four-course sequence introducing foundational theory and practice of robotics engineering from the fields of computer science, electrical engineering and mechanical engineering . The focus of this course is interaction with the environment through sensors, feedback and decision processes . Concepts of stress and strain as related to sensing of force, and principles of operation and interface methods for electronic transducers of strain, light, proximity and angle will be presented . Basic feedback mechanisms for mechanical systems will be implemented via electronic circuits and software mechanisms . The necessary software concepts will be introduced for modular design and implementation of decision algorithms and finite state machines . Laboratory sessions consist of hands-on exercises and team projects where students design and build robots and related sub-systems .Recommended background: RBE 2001, CS 1101 or CS 1102.

Proposed title, description, and course offering:

RBE 2002. UNIFIED ROBOTICS II: SENSING.

Cat. I

Second of a four-course sequence introducing foundational theory and practice of robotics engineering and the application of concepts from the fields of computer science, electrical engineering and mechanical engineering to the design of robots. The focus of this course is the interactions between a robot and the environment through sensors, feedback and decision processes. Principles of electronic transducers, including performance, selection, and application of sensors will be presented. Interfaces between microcontrollers and sensors are introduced, including conditioning circuits, filters, analog-to-digital conversion, digitization, and sampling. Basic feedback mechanisms for mechanical systems will be implemented via electronic circuits and software mechanisms. The necessary software concepts will be introduced for modular design and implementation of decision algorithms and finite state machines. Laboratory sessions consist of hands-on exercises and team projects where students design and build robots and related sub-systems. Recommended background: RBE 2001, ECE 2010, and either CS 1101 or CS 1102.

Explanation of Motion: The updated description reflects updates to the second-year sequence (RBE 2002 is updated in a separate motion) that better capture the objectives for the sequence. The heart of the course remains unchanged and it retains its place in the requirements for an RBE major or minor.

Rationale: The proposed description is guided by two general principles:

3. Reinforce the notion that robotics courses should focus on the *application and integration* of fundamental material in the supporting disciplines, and
4. Better define the 200x sequence as: a course focusing on actuation (2001) and a course focusing on sensors (2002).

Impacts on students: The largest effect on students is that ECE 2010 is added as recommended background. Between this and the related motion for RBE 2001, the overall impact on student schedules is minimal, as students will still have to take two courses to prepare for the 200x sequence. Materials will be made available for students during the transition of the courses – those that have already taken ECE 2029 will not need to take ECE 2010 as well.

Resource Needs:

Unchanged

Implementation Date: 2021-22 Academic year.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Rolle, Chair)
Re: Motion to offer a B.S./M.S. Program in Neuroscience

Motion: The Committee on Graduate Studies and Research recommends and I move that the following B.S./M.S. Program in Neuroscience be added as described below.

Proposed B.S./M.S. Program in Neuroscience

This B.S./M.S. Program in Neuroscience allows students to pursue a five-year Bachelor's/Master's program, in which the Bachelor's degree is awarded in any major offered at WPI and the Master's degree is awarded in Neuroscience.

WPI rules for B.S./M.S. programs are described in Section 5 of the undergraduate catalog and on page 21 of the graduate catalog. The conversion between graduate credits and undergraduate units (1 graduate credit hour = 1/6 undergraduate unit) is also described in those sections of the catalogs.

1. Program Description

Students enrolled in the B.S./M.S. program must satisfy all the program requirements of their respective B.S. degree and all the program requirements of the M.S. degree in Neuroscience. WPI allows B.S./M.S. students to double-count courses towards both their undergraduate and graduate degrees whose credit hours total no more than 40 percent of the 31 graduate credit hours required for the M.S. degree in Neuroscience (i.e., up to 12 graduate credits or equivalently 2 undergraduate units), and that meet all other requirements for each degree. These courses can include graduate courses as well as certain undergraduate 4000-level courses, listed below, that are acceptable for satisfying Neuroscience M.S. requirements.

In consultation with the student's major Academic Advisor and the Neuroscience Program Director, the student prepares a Plan of Study outlining the selections made to satisfy the B.S./M.S. degree requirements, including the courses that will be double-counted. This Plan of Study must then be approved by the Neuroscience Faculty Steering Committee.

2. Admissions Requirements

Any WPI undergraduate student may apply to the B.S./M.S. program in Neuroscience. Students are expected to apply for admission to the B.S./M.S. program during their junior year so that they have sufficient time to plan their course selection with their major Academic Advisor and the Neuroscience Program Director.

3. Double-Counting Rules

4000-level courses and projects that can be double-counted

For the 4000-level courses listed below, two graduate credits will be earned towards the B.S./M.S. degree if the student achieves a grade of B or higher.

- Bioinformatics and Computational Biology courses:
 - BCB 4001/BB4801. Bioinformatics
 - BCB 4002/CS 4802. Biovisualization
 - BCB 4003/CS 4803. Biological and Biomedical Database Mining
 - BCB 4004/MA 4603. Statistical Methods in Genetics and Bioinformatics
- Biology and Biotechnology courses:
 - BB/CH 4190. Regulation of Gene Expression
 - BB 4260. Synthetic Biology
 - BB/CH 4170. Experimental Genetic Engineering
- Biomedical Engineering courses:
 - BME/ECE 4011. Biomedical Signal Analysis
 - BME 4201. Biomedical Imaging
- Chemistry and Biochemistry courses:
 - CH 4110. Protein Structure and Function
 - CH 4120. Lipids and Biomembrane Functions
 - CH4160. Membrane Biophysics
 - CH/BBT 4170. Experimental Genetic Engineering
- Computer Science courses:
 - CS 4341. Introduction to Artificial Intelligence
 - CS 4342. Machine Learning
 - CS 4432. Database Systems II
 - CS 4445. Data Mining and Knowledge Discovery in Databases
 - CS 4518. Mobile and Ubiquitous Computing
 - CS 4802/BCB 4002. Biovisualization
 - CS 4803/BCB 4003. Biological and Biomedical Database Mining
- Data Science courses:
 - DS 4635/MA 4635. Data Analytics and Statistical Learning
- Mathematics courses:
 - MA 4631. Probability and Mathematical Statistics I
 - MA 4632. Probability and Mathematical Statistics II
 - MA 4635/DS 4635. Data Analytics and Statistical Learning
- Psychology courses:
 - PSY 4800. Special Topics in Psychological Science
 - PSY 4900. Advanced Research in Psychological Science
- Major Qualifying Project (MQP):

Up to 3 graduate credits (equal to 1/2 undergraduate unit) can be earned towards fulfillment of the Neuroscience thesis requirement by double counting a Major Qualifying Project, provided that:

 - (1) the MQP involves substantial use of Neuroscience at an advanced level,
 - (2) the thesis research is a continuation or extension of the MQP work,

- (3) the student satisfies the thesis requirement by completing at least 6 additional credits of NEU 599 Thesis Research, and
- (4) the M.S. thesis advisor and the Neuroscience Faculty Steering Committee approve the double-counting.

MQP work may not be double-counted toward the non-thesis option.

Other 4000-level courses and independent studies not on this list but that could be used to satisfy Neuroscience M.S. requirements may be petitioned to double-count. Such petitions need to be approved by the Neuroscience Faculty Steering Committee.

Graduate courses that can be double-counted

A student in the B.S./M.S. Program in Neuroscience can double-count any of the graduate courses listed as electives in the Neuroscience M.S. Degree description in the WPI Graduate Catalog if the course also satisfies a requirement of the student's B.S. degree.

Restricted Undergraduate and Graduate Course Pairs

Some undergraduate and graduate courses have significant overlap in their content. The following table lists these courses. A student can receive credit towards their M.S. degree for at most one of the two courses in any row of this table.

Courses in Bioinformatics and Computational Biology	
Undergraduate Course	Graduate Course
BCB 4001/BB4801. Bioinformatics	BCB 501/BBT 581 Bioinformatics
BCB 4002/CS 4802. Biovisualization	BCB 502/CS 582 Biovisualization
BCB 4004/MA 4603. Statistical Methods in Genetics and Bioinformatics	BCB 504/MA 584 Statistical Methods in Genetics and Bioinformatics
Courses in Computer Science	
Undergraduate Course	Graduate Course
CS 4341 Introduction to Artificial Intelligence	CS 534 Artificial Intelligence
CS 4342 Machine Learning	CS 539 Machine Learning
CS 4432 Database Systems II	CS 542 Database Management Systems
CS 4518 Mobile and Ubiquitous Computing	CS 528 Mobile and Ubiquitous Computing
Courses in Mathematics	

Undergraduate Course	Graduate Course
MA 4631 Probability and Mathematical Statistics I	MA 540 Probability and Mathematical Statistics I
MA 4632 Probability and Mathematical Statistics II	MA 541 Probability and Mathematical Statistics II
DS 4635/MA 4635 Data Analytics and Statistical Learning	MA 543/DS 502 Statistical Methods for Data Science

Rationale for the B.S./M.S. Program in Neuroscience

Understanding the human brain and peripheral nervous system is one of the most significant scientific challenges of our time. Deciphering interactions between different neural structures links the diverse fields of neuroscience, psychological and cognitive science, cell and molecular biology, computer science, biomedical engineering, mathematics, and physics. The mission of the Neuroscience Program at WPI is to provide an outstanding education to its students and to advance scholarship in the biological, behavioral, and computational aspects of the study of the nervous system and its interaction with the world.

The Neuroscience Program at WPI offers an M.S. degree. Given that this program is highly interdisciplinary, it attracts students from different majors and backgrounds: Biology and Biotechnology, Bioinformatics and Computational Biology, Biomedical Engineering, Chemistry and Biochemistry, Computer Science, Data Science, Mathematics and Psychological Science to name a few. Hence, this B.S./M.S. Program in Neuroscience would provide a wide range of students with the option of pursuing a Bachelor's/Master's program, in which the Bachelor's degree is awarded in any major offered at WPI and the Master's degree is awarded in Neuroscience.

WPI has a long tradition of offering the B.S./M.S. option to its students, either in the same department/program or in different departments/programs. There are numerous examples of B.S./M.S. students who have completed their B.S. degree in a department or program (e.g., Physics) and their M.S. degree in a different department or program (e.g., Computer Science). Departments and programs that offer the B.S./M.S. option regulate the M.S. portion of the degree (e.g., what undergraduate courses can be double-counted toward the M.S. degree); note that these department/program-specific B.S./M.S. regulations are provided in the WPI Graduate Catalog (and not in the WPI Undergraduate Catalog). With a few exceptions (e.g., the B.S./M.S. options in Fire Protection Engineering and in Systems Engineering, which are only available to engineering undergraduate majors), departments/programs' B.S./M.S. options are available to any undergraduate major (see for example the B.S./M.S. option in Data Science on pp. 93-94 of the current Grad Catalog). In that spirit, the proposed B.S./M.S. in Neuroscience allows students in any undergraduate major to apply.

Note that there are several programs at WPI that offer the B.S./M.S. option to students even if they offer only graduate degrees and not a B.S. degree. Examples of these are the Fire Protection Engineering Program (see p. 113 of the current Grad Catalog), the Systems Engineering Program

(see p. 201 of the current Grad Catalog), and until recently the Data Science Program (which has had a BS/MS option since 2013 while it only started to offer a B.S. degree this academic year).

The B.S./M.S. Program in Neuroscience described here follows all the WPI B.S./M.S. rules. It has been informed by the B.S./M.S. program descriptions in the WPI Graduate Catalog; in particular those of interdisciplinary programs, including the B.S./M.S. in Data Science (see pp. 93-94 of the current Grad Catalog), in Bioinformatics and Computational Biology (see p. 35 of the current Grad Catalog) and in Robotics Engineering (which allows its B.S./M.S. students to double-count MQP credits towards the M.S. thesis option; see p. 181 of the current Grad Catalog). This B.S./M.S. program in Neuroscience has drawn aspects of and is consistent with B.S./M.S. programs offered by departments and programs involved in the interdisciplinary Neuroscience program, including Computer Science, Chemistry and Biochemistry and Biomedical Engineering.

Impact on Degree Requirements:

None.

Resources Needed:

None.

Implementation Date:

Implementation date for this action is AY2021-2022.

WPI Faculty Contacts:

BS/MS Program in Neuroscience:

Carolina Ruiz, Computer Science

Neuroscience Program Director:

Jagan Srinivasan, Biology and Biotechnology

Neuroscience Faculty Steering Committee:

Robert Dempski, Chemistry and Biochemistry

Joseph Duffy, Biology and Biotechnology

Songbai Ji, Biomedical Engineering

Jean King, Biology and Biotechnology and Dean of Arts & Sciences

Dmitry Korin, Computer Science

Adam Lammert, Biomedical Engineering

Inna Nechipurenko, Biology and Biotechnology

Benjamin Nephew, Biology and Biotechnology

Angela Rodriguez, Social Sciences and Policy Students (Psychological and Cognitive Science Program)

Carolina Ruiz, Computer Science

Suzanne Scarlata, Chemistry and Biochemistry

Jeanine Skorinko, Social Sciences and Policy Students (Psychological and Cognitive Science Program)

Erin Solovey, Computer Science

Jagan Srinivasan, Biology and Biotechnology
Ali Yousefi, Computer Science

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to approve the addition of **Custom-designed Specialties to FBS MS and MBA programs**. This motion was approved by the Foisie Business School on Dec 2, 2020.

Motion: The Committee on Graduate Studies and Research recommends, and I move that Students in FBS MS and MBA programs may request approval of substitutions to an existing specialties or of a custom-designed specialty within their MS or MBA program, as described below.

Summary: *(Overview of what is being proposed and why.)*

The FBS is revising all of its master's programs (except the MS MG) into a stackable curriculum design that facilitates sharing of 3-course specialties across programs. With this design, we can support the various programs of interest to students, while also facilitating the commonalities between our programs. While we have designed appropriate specialties, we have already received requests from students for changes in the specialties. This motion provides policies for changing existing specialties and creating new custom-designed specialties.

Proposed Modifications to Graduate Catalog:

(ALL relevant sections to be added to the graduate catalog should be included. Remember, the graduate catalog is a contract with our students. Specifically, the following should be addressed)

Catalog Additions:

Student Designed Specialties:

Specialties are a coherent set of three courses, selected from a defined list of three or more courses, which are available to one or more master's program. Students may request approval for a one-course substitution within an existing specialty or may create a new custom specialty. This option to make changes applies to all FBS master's program that have specialties (the MS MG, which does not have specialties, is excluded).

Substitution of One Course within an Existing Specialty: Students may substitute one course not in the list of courses for a specialty, with permission from the Program Director for that program. The specialty should continue to be a coherent set of courses and should follow the rules of the program, e.g., the specialties in the MBA program must all be FBS business courses.

Creation of a Custom Specialty: Students may design a custom specialty if they find that the existing specialties do not match their interests. Such a specialty must be approved by the Program Director and, for MS programs, the SPCC (the committee responsible for FBS specialty MS programs) or for the MBA, the IPCC (the committee responsible for the MBA program). A custom specialty must be relevant to the degree program in which the student is enrolled. Students may only create one custom specialty for their program. Examples of when a custom specialty might be appropriate include a student who is interested in (1) adding both depth and breadth by creating a specialty consisting of a second level course in multiple areas, in contrast to the existing specialties which typical focus on a single area, or in (2) focusing on a new topic by doing independent studies with a faculty member in an emerging area within their program.

For the second example, if their topic is research-related within a MS program, the student might consider a Research Specialty instead of a Custom Specialty.

Faculty Contacts: Sharon Johnson, PD MS OAM and Chair SPCC; Purvi Shah, PD, MBA and Chair, IPCC; Joe Sarkis, PD MS SCM; Soussan Djamasi, PD MS IUX; Diane Strong, PD MS IT and MS BA, DH.

Implementation Date: AY 2021-2022 catalog.

Resources Required:

No new resources are required because there are no new courses. Changes to Specialties are different groupings of existing courses.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Rolle, Chair)
Re: Motion to approve the addition of a **Research Specialty to FBS specialty MS programs**. This motion was approved by the Foisie Business School on Dec 2, 2020.

Motion: The Committee on Graduate Studies and Research recommends, and I move that a Research Specialty be added to each of the FBS specialty MS programs, as described below.

Summary: *(Overview of what is being proposed and why.)*

The FBS is revising all of its specialty MS programs into a stackable curriculum design that facilitates sharing of 3-course specialties across programs. With this design, we can support the various programs of interest to students, while also facilitating the commonalities between our programs. While most students in these programs are taking them as professional MS programs, some students are taking a specialty MS program with the goal of doing research and possibly joining the FBS or another PhD program. For such students, this motion provides policies for selecting a Research Specialty, with permission of the Program Director, instead of a second professionally-focused specialty.

Proposed Modifications to Graduate Catalog:

(ALL relevant sections to be added to the graduate catalog should be included. Remember, the graduate catalog is a contract with our students. Specifically, the following should be addressed)

Catalog Additions:

Research Specialty:

Like other FBS MS specialties, the Research Specialty is a coherent set of three courses, but it is focused on research activities and contributions rather than professional knowledge and skills. Selecting a Research Specialty requires the permission of the Program Director (PD) for the MS specialty program in which the student is enrolled and a research advisor. Only one of the two specialties in a FBS MS specialty program can be a research specialty.

The Research Specialty consists of 9 credit hours, taken as a combination of the following:

- BUS 5900 Internship (May be taken multiple times for 0-3 credits, max 3 credits total)
- BUS 598 Independent Study (May be taken multiple times for variable credit hours)
- BUS 698 Directed Research (May be taken multiple times for variable credit hours)

All 9 credits are taken under the direction of the Program Director or other approved faculty.

BUS 5900 taken as part of the Research Specialty must be focused on research activity consistent with the Research Specialty, conducted in partnership with a sponsor, and under the direction of the faculty advisor for the Research Specialty. Thus, it differs from the typical student internship selected solely by a student.

Faculty Contacts: Sharon Johnson, PD MS OAM and Chair SPCC; Joe Sarkis, PD MS SCM; Soussan Djamasbi, PD MS IUX; Diane Strong, PD MS IT and MS BA, DH.

Implementation Date: AY 2021-2022 catalog.

Resources Required:

No new resources are required because there are no new courses.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Rolle, Chair)
Re: Motion to revise an existing graduate program, retitling the **existing MS in Operations Management and Analytics** as the **MS in Operations and Supply Chain Analytics**.
(Approved by the Foisie Business School on Feb 18, 2021)

Motion: The Committee on Graduate Studies and Research recommends, and I move that the following changes to the MS in Operations Management and Analytics program be made, as described below.

Summary: *(Overview of what is being proposed and why)*

We propose to retitle the MS in Operations Analytics and Management as the **MS in Operations and Supply Chain Analytics** in the Foisie Business School (FBS), to respond to market changes and to consolidate the existing MS programs in Operations Management and Analytics and Supply Chain Management. The number of credits required to complete the program is reduced from 36 credits to 33 credits. The proposed changes respond to market demand for individuals who can use data and analytical approaches to design and manage internal operations as well as supply and distribution. There is considerable overlap between the intent and coursework in the existing MS degrees; a consolidated degree serves students efficiently. Flexibility within the redesigned degree allows students to concentrate more on analytic methods or on operations and supply chain management, depending on their interests. The MS in Operations and Supply Chain Analytics can be delivered by current faculty and with existing courses. The proposed changes are primarily a re-packaging of existing courses.

Proposed Modifications to Graduate Catalog:

(ALL relevant sections to be added to the graduate catalog should be included. Remember, the graduate catalog is a contract with our students. Specifically, the following should be addressed)

**Degree Title: MS in Operations and Supply Chain Analytics
(33 Credits)**

Program Goals and Objectives

The ability to effectively deliver products and services is core to organizational success. While striving for excellence in internal operations, organizations in virtually every industry rely on intricate supply chains to globally manage goods and meet demand for product and services. Synchronizing the flow of products, information, and funds is complex, increasingly enabled by data, analytics, and new technologies.

The MS in Operations and Supply Chain Analytics (OSCA) is designed to provide students with a foundation in three areas:

- Operations: internally focused, with an emphasis in the market on achieving excellence
- Supply chain: designing and managing a network to support end-to-end delivery of goods and services
- Operations analytics: methods to harness insights from data and support decision-making

Students then build depth by choosing specialties in two of these three areas. The program culminates in a real-world, team-based project, which ensures that students are prepared to be successful in a data-driven, technological business environment.

Admissions Requirements

Admission requirements are the same as all other master's programs in the Foisie Business School, as follows. For FBS Master's programs, applicants should have the analytic aptitude and academic preparation necessary to complete a technology-oriented business program. This includes a minimum of three semesters of college level math or two semesters of college level calculus.

Applicants must have the earned equivalent of a four-year U.S. bachelor's degree to be considered for admission. Admission decisions are based upon all the information required from the applicant. GMAT or GRE required; waived for WPI students and alumni with a cumulative undergraduate GPA of 3.0+. Waivers may be considered based on work experience and/or advanced degrees.

Faculty Contacts

Sharon Johnson, Renata Konrad, Sara Saberi, Joe Sarkis, Walter Towner, Andy Trapp, Joe Zhu

Requirements for the M.S. in Business Analytics (MS OSCA)

The MS in Operations and Supply Chain Analytics (OSCA) is designed as a stackable, professional master's degree. As such, it includes courses focused on decision-making in the operations and supply chain domain, as well as on analytic methods and a realistic capstone project. The degree requires at least 33 credits hours of study, i.e., eleven 3-credit courses. Courses listed in multiple specialties cannot be double-counted.

MS OSCA students must complete a three-course core as follows:

- OIE 501 Operations Management
- OIE 544 Supply Chain Analysis and Design
- OIE 552 Modeling and Optimizing Processes

MS OSCA students must complete two three-course specialties, selected from the following:

- ***Specialty in Supply Chain Management***

Choose one course from:

- OIE 553 Global Purchasing and Logistics
- OIE 549 Sustainable Supply Chain and Operations Management

Choose two courses from:

- MKT 561 Consumer Behavior and Analytics
- OBC 533 Negotiations
- OIE 553 Global Purchasing and Logistics
- OIE 548 Performance Analytics
- OIE 549 Sustainable Supply Chain and Operations Management

- ***Specialty in Advanced Operations Analytics***

Choose 3 courses from:

MIS 587 Business Applications in Machine Learning

OIE 542 Risk Management and Decision Analysis

OIE 548 Performance Analytics

OIE 559 Advanced Prescriptive Analytics: From Data to Impact

- ***Specialty in Operational Excellence***

Choose one course from:

OIE 554 Global Operations Strategy

OIE 558 Designing and Managing Lean Six Sigma Processes

Choose 2 courses from:

FIN 500 Financial Information and Management

MIS 576 Project Management

OBC 537 Leading Change

OIE 554 Global Operations Strategy

OIE 558 Designing and Managing Lean Six Sigma Processes

- ***Custom specialty*** (requires approval; see catalog description)

- ***Research specialty*** (requires approval; see catalog description)

MS OSCA students must complete a two-course capstone project experience as follows:

- OBC 505 Teaming and Organizing for Innovation

- OIE 597 Operations and Supply Chain Consulting Project

Additional Recommendation

- On-campus, international students are encouraged to complete up to three additional credits of internship to ensure their readiness for employment in the U.S.

(Replaces existing catalog description:

MS in Operations Management and Analytics (MSOAM)

(36 credits)

Today's business environments deal constantly with changes requiring leadership for operational solutions. The MSOAM is a comprehensive Operations Management program that provides students with the ability to customize their program with a broad selection of electives focusing in depth on issues in operations management and related business areas.

MSOAM students complete the following required courses:

- *OBC 505 Teaming and Organizing for Innovation*
- *OIE 501 Designing Operations for Competitive Advantage*
- *OIE 542 Risk Management and Decision Analysis*
- *OIE 544 Supply Chain Analysis and Design*
- *OIE 552 Modeling and Optimizing Processes*
- *OIE 554 Global Operations Strategy*
- *OIE 558 Designing and Managing Lean Six Sigma Processes*

Choose 1 (the other may be used as an elective):

- *MIS 500 Innovating with Information Systems*
- *MIS 571 Database Applications Design and Development*

Students then select 4 electives from the following list:

- *BUS 522 Global Business Experience*
- *BUS 545 Introduction to Health Systems*
- *BUS 546 Managing Technological Innovation*
- *BUS 547 Energy Management*
- *BUS 5900 Internship*
- *MIS 573 System Design and Development*
- *MIS 576 Project Management*
- *MIS 581 Policy and Strategy for I.T. and Analytics*
- *MIS 582 Information Security Management*
- *MIS 583 User Experience Applications*
- *MIS 584 Business Intelligence*
- *MIS 585 User Experience Design*
- *MKT 568 Data Mining Business Applications*
- *OBC 506 The Heart of Leadership: Power, Reflection, and Interpersonal Skills*
- *OBC 533 Negotiations*
- *OBC 536 Organizational Design*
- *OBC 537 Leading Change*
- *OIE 548 Performance Analytics*
- *OIE 553 Global Purchasing and Logistics*
- *OIE 556 Health Systems Modeling and Improvement*
- *OIE 559 Optimization for Business Analytics)*

Revisions to Existing Course Descriptions

Titles and descriptions of three graduate courses will be modified in the revised program.

Revised title and description:

OIE 559 Advanced Prescriptive Analytics: From Data to Impact

This course provides an in-depth focus on prescriptive analytics, which involves the use of data, assumptions, and mathematical modeling of real-world decision problems to ascertain and recommend optimal courses of action. Starting from conceptualization of the problem, to using theory for translational modeling and techniques, to computational solving, and finally interpretation – likely in an iterative manner – students will gain knowledge of tools and practical skills in transforming real-world decision problems into actionable insights. Advanced topics in the prescriptive analytics domain will be covered, such as the use of integer variables to represent important logical constructs, using nonlinear functions to represent real-world decision aspects, the incorporation of stochasticity and uncertainty, and corresponding solution methods. Real-world problems will be selected from a variety of contexts that may include capacity management, data science, finance, healthcare, humanitarian operations, inventory management, production planning, routing, staffing, and supply chain. Students will complete an individual project that includes a report in the style of a technical report or research paper, as well as an oral presentation. (Prerequisite: OIE 552, equivalent knowledge about optimization and linear programming, or consent of the instructor. Students may not receive credit for both OIE 4430 and OIE 559).

(Current Title and Description:

OIE 559. OPTIMIZATION FOR BUSINESS ANALYTICS

This course covers mathematical optimization beyond the foundational concepts of linear programming. Approaching from the perspective of obtaining globally optimal solutions, a variety of optimization problem classes will be addressed, likely including integer programming, nonlinear programming, and stochastic programming. While ensuring an appropriate level of theory, the emphasis of the course will be on the mathematical modeling and computational solution aspects of such problems that may arise in the finance, healthcare, humanitarian, inventory, nonprofit, operations, production, staffing, and supply chain sectors, among others. (Prerequisite: OIE 552, equivalent knowledge about optimization and linear programming, or consent of the instructor).

Revised title and description:

OIE 597 Operations and Supply Chain Consulting Project

This capstone course serves as a practical integration of the operations and supply chain theories, practices, tools and techniques that students learned in their MS program. The medium is a major team-based project, sponsored by an external organization. The course goals are: (1) to enrich students' experiential learning and support the acquisition of the skills and capabilities to tackle real-world problems; and (2) to enhance students' teamwork, interpersonal and consulting skills. Students will produce a written report documenting their solutions, and providing the financial, organizational, and technical rationale for their approach. They will also formally present their results to the project sponsors. Students are expected to have completed (or be currently completing) all the course requirements for their MS in Operations and Supply Chain Analytics prior to taking the capstone project.

(Current title and description:

OIE 597 Supply Chain Consulting Project

This course integrates Supply Chain Management theory and practice, and incorporates a number of skills and tools acquired in the Supply Chain Management curriculum. The objective of this course is twofold: (1) to enrich students' experiential learning and equip the students with additional skillsets and capabilities to tackle real-world problems; and (2) to enhance their teamwork, interpersonal and consulting skills. The media is a consulting project, to be sponsored by an external organization, and is completed in teams. In addition to a written report, the project will be formally presented to members of the School, outside sponsors and other interested parties.)

Revised title and description:

OIE 549 Sustainable Supply Chain and Operations Management

The environmental implications and responsibilities of organizations begin at an organization's boundaries with management of their operations, but also extend to incorporate inter-organizational relationships and networks, the supply chain. We will investigate the practice and theory of sustainable supply chains and operations management in organizations throughout the world. This course is intended to provide students with understanding the intra- and inter-organizational implications of environmental sustainability practices and policies. The role of organizational supply chain management functions, activities, tools and methods and their relationship to the natural environment will be introduced and discussed. The goals are for students to grasp the scope of general supply chain/operations management and environmental

sustainability as they relate to the firm; to be able to relate to the manners in which management may respond and collaborate internally and with suppliers, customers, and various other stakeholders influencing and influenced by operational and supply chain activities from practical and theoretical case studies; able to evaluate various factors and understand tradeoffs in management decisions as they pertain to environmental supply chain management.

(Current title:

OIE 598 Special Topics – Sustainable Supply Chain and Operations Management)

This course has been offered as an experimental course in Spring 2016 (13 students), Spring 2019 (14 students) and Spring 2020 (14 students). The course has been well received by students (with an average score of about 4.5 on student evaluations). The course is also a good fit with the Circular Economy and Data Analytics Engineering Research for Sustainability (CEDARS) NSF research traineeship program

Opportunity and Market Analysis:

(An assessment of the need for the program and potential student interest)

Based on a recent market analysis, operation and supply chain related jobs are expected to grow approximately 10% over the next 8 years, with opportunities as analysts and managers across different industry segments and geographic locations. Top skills sought by employers include business process analysis, supply chain knowledge, data analysis, project management and change management, which match well with the elements included in the proposed MS.

The MS OSCA program consolidates two programs with substantial overlap in requirements (the Operations Management and Analytics (OAM) and Supply Chain Management (SCM) degrees), while providing the flexibility to tailor the program to students' career goals through the stackable structure. Students can choose to build depth in operational excellence, analytics and supply chain topics. The choice between the two existing programs was difficult to delineate when recruiting. When the Supply Chain Management degree was introduced in 2017, the goal was to increase the total pool of students across both programs. In 2018, applications to both programs was about the same as for the OAM program alone in 2017; enrollment in both programs has declined but they remain about equal in size. Recruiting for and managing a single degree is expect to be both more effective and efficient.

Comparison to and Impact on Existing Programs at WPI

The proposed MS in Operations and Supply Chain Analytics overlaps with other degree programs within the FBS through specialty choices. Currently, within the MS in Business Analytics and MBA degrees, students can choose a specialty (a 3-course sequence) in operations analytics. The focus of each degree (framed by the core requirements and capstone experience) is different, with students in the MS in Business Analytics and MBA developing expertise across different areas of business (rather than solely in the operations and supply chain domain). These degree programs are expected to appeal to different groups of students, yielding overall higher enrollments, while efficiently delivering content that crosses programs.

Comparable Programs at other Universities

Relatively few academic programs exist within business schools that combine elements of operations/supply chain and analytics. More commonly, these are addressed separately, focused

either on the domain (e.g., supply chain management) or methods (e.g., business analytics). Programs similar to the revised degree are offered at the following universities:

University	Program Name	University	Program Name
Rutgers	MS Supply Chain Analytics	University of Missouri	Supply Chain Analytics
University of North Texas	Supply Chain Analytics	Oregon State University	Master of Science in Business (MSB) with a concentration in supply chain analytics
University of Colorado	Supply Chain Analytics	Stevens Institute of Technology	Operations and Supply Chain Analytics
University of Rhode Island	Supply Chain Management and Applied Analytics	University of Arkansas	MS in Operations Analytics

Implementation:

Program Management

Like the other MS degrees in the FBS, this program will be the responsibility of our Specialized Policy and Curriculum Committee (SPCC) for FBS graduate programs, current chair Professor Sharon Johnson. Changes to the program, student petitions, etc. will all go through this committee.

Implementation Date

The implementation date for the revised program is the 2021-2022 academic year, delivering the program both on campus and online. The date is feasible because the courses that are part of the program are currently being offered and will continue to be offered. Students who are currently in the MS in Operations Management and Analytics program (or have been admitted for Fall 2021) can complete the existing program or choose to move to the modified requirements.

Competency Goals

The following competency goals are defined for the MS in OSCA program to support assurance of learning for AACSB accreditation:

CG1 - Evidence-based Problem Solving:

Be able to formulate a problem, choose appropriate method(s), solve the problem, and then interpret the results, using operational data and other evidence to support the process.

CG2 -Team-based Collaboration:

Be able to work with others with different skill sets to develop solutions and communicate results

CG3 - Operations and Supply Chain Excellence:

Be able to identify the role of operations and the supply chain in improving organizational capabilities and how they are linked with other functions.

CG4 - Designing and Improving Efficacy:

Be able to use appropriate tools and analysis methods to design and improve operations and supply chain efficacy

Resources Required:

No additional resources are required to offer this program.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Rolle, Chair)
Re: Motion to approve revisions to an existing graduate program, **MS in IUX (Innovation with User Experience)**. This motion was approved by the Foisie Business School on Dec. 2, 2020.

Motion: The Committee on Graduate Studies and Research recommends, and I move that the existing graduate program, Master of Science in Innovation with User Experience (MS IUX), be revised, as described below.

Summary: *(Overview of what is being proposed and why.)*

The FBS is revising all of its master's programs into a stackable curriculum design that facilitates sharing of 3-course specialties across programs. With this design, we can support the various programs of interest to students, while also facilitating the commonalities between our programs. In doing so, we are reducing most of our MS programs from 36 credits to 33 credits. The general stackable design for our MS programs is:

- 3-course core
- Student selection of two 3-course specialties
- A capstone experience involving a course on teaming and a capstone project

The MS in IUX was launched in Fall 2018 with the first graduate in May 2019. As a new program, it is still small, but is growing. To date, it is attracting WPI undergraduates as a MS option for their BS/MS. It is also attracting MS in Marketing Innovation students because the MS IUX is STEM-designated, which the MS MI is not, and the two degrees have overlaps. We are now making the program available online to attract working professionals.

The stackable design proposed below is a re-structuring of the existing MS IUX design. It involves no new courses and no revisions to existing courses, and thus no new resources are required.

Proposed Modifications to Graduate Catalog:

(ALL relevant sections to be added to the graduate catalog should be included. Remember, the graduate catalog is a contract with our students. Specifically, the following should be addressed:)

Program Goals and Objectives:

Current Catalog version:

Rapid advances in science and engineering allow companies to develop increasingly sophisticated IT products. As the IT industry matures, competition is increasingly shifting toward providing outstanding user experiences (UX). Innovation with UX is becoming essential in developing IT products and services that can maintain competitive advantage in the marketplace. The Foisie Business School has world-class expertise and resources in UX and is ideally positioned to prepare students as UX professionals and set them on a path to take on leadership positions such as chief experience officers (CXO).

New Catalog version:

Rapid advances in science and engineering facilitate the development of increasingly sophisticated IT products that permeate our daily lives. At a personal level, more and more people come to rely on smart and connected technologies to meet their basic communication and information needs at home and at work, for personal decisions such as managing their health and wellness to complex work related decisions such those that require global and distributed responses to emergency situations. Similarly, at an organizational level, more and more companies must increasingly rely on smart and connected technologies to guarantee positive organizational outcomes, supporting their employees with a work environment that can help them deliver prompt and accurate business decisions required by a global and connected digital economy.

The continual demand for innovative technologies in our daily lives, both at personal and organizational level, is intensified by the continually increasing pace of our digital economy. To maintain competitive advantage, tech companies must ensure that their products are successfully embraced and effectively used by their intended users at home and at work. To achieve this goal, competition in the IT industry has shifted toward developing an outstanding user experience (UX). UX-driven innovations are no longer a luxury but a must for maintaining competitive advantage in the marketplace.

Grounded in technology, design, and business disciplines, the Innovation with UX (IUX) program is designed to deliver a highly qualified and competitive workforce for the IT industry. The Foisie Business School has world-class expertise and resources in UX and is ideally positioned to prepare students as UX professionals and set them on a path to take on leadership positions such as chief experience officers (CXO). The program provides students with the skills for careers as product designers, UX designers, UX researchers, and innovative UX business leaders. It prepares them for working in advanced technological environments (future work) where they apply the UX driven innovation (UXDI) framework to help their companies develop competitive products and services. In our project-based, asynchronous online learning environment, students will:

- Gain foundational knowledge in design thinking, design science, and the UX-driven innovation (UXDI) framework for developing technological innovations (e.g., smart and connected systems, robots, AR/VR applications) for homes and work environments.
- Develop and execute plans for gaining a deep understanding about user needs.
- Develop and execute plans for discovering opportunities for creating business and social value with UX driven innovations.
- Develop and execute plans for designing and evaluating the discovered UX-driven innovation opportunities.
- Develop advanced skills in focused area(s) of interest through the specialties offered in this program such as Applied Analytics, Brands, Products and Consumers, Managing and Organizing Innovation, IUX Research, System Design for IUX, and others.
- Benefit from the capstone experience that enables them to revise, integrate, and apply their knowledge and skills through a large project.

Admissions Requirements:

No changes to existing requirements.

Faculty Contacts: Soussan Djammasbi, Diane Strong.

Requirements for the MS in Innovation with User Experience (MS IUX) – 33 credits:
(For the prior structure of the MS IUX, see p.5 in the current graduate catalog.)

The MS IUX is designed as a stackable, professional master’s degree. As such, it involves a realistic capstone project. The MS IUX also serves as an entry to the PhD program in the Foisie Business School, and thus allows for research credits (with permission of the IUX program director).

Note on Delivery mode: All FBS courses in this program can be completed entirely online, with some of these courses having optional synchronous sessions.

Requirement 1: MS IUX students must complete the three-course core as follows:

- MIS 583 User Experience Applications
- MIS 585 User Experience Design
- MIS 586 User Experience Methods

Requirement 2: MS IUX students must complete two three-course specialties, selected from the following specialties:

- Brands, Products and Consumers
 - MKT 500 Marketing Strategy
 - MKT 561 Consumer Behavior and Analytics
 - MKT 569 Brand and Product Management
- System Design for IUX (Select any 3; The first three are online; the others, which are not FBS courses, may not be available online)
 - MIS 500 Innovating with Information Systems
 - MIS 571 Database Applications Design and Development
 - MIS 582 Information Security Design and Management
 - IMGD 5000 Game Design Studio
 - IMGD 5300 Design of Interactive Experiences
 - RBE/CS 526 Human-Robot Interaction
 - RBE 595 Synergy of Human and Robot Systems
 - WR 593 Robot Futures: Design, Ethics, Communication
- Applied Analytics (Select any 3)
 - MIS 502 Data Management for Analytics
 - MIS 584 Business Intelligence
 - MIS 587 Business Applications in Machine Learning
 - OIE 559 Optimization for Business Analytics
 - DS 501 Introduction to Data Science
 - DS 502 Statistical Methods for Data Science
 - MA 511 Applied Statistics for Engineers
- Organizing and Managing Innovation (Select any 3)
 - FIN 500 Financial Information and Management

- ETR 500 Entrepreneurship and Innovation
- ETR 593 Technology Commercialization
- MIS 576 Project Management
- OBC 503 Negotiations
- OBC 537 Change Management
- Research Specialty (requires Program Director permission)
- Custom Specialty (see rules for designing your own specialty)
- Additional specialties may be developed in the future

Requirement 3: MS IUX students must complete a two-course capstone project experience.

- OBC 505 Teaming and Organizing for Innovation
- MIS 573 System Design and Development

Notes on the MS IUX participation in an NRT program:

NRT refers to the National Science Foundation **R**esearch **T**raineeship program, which provides one year of funding to students in designated programs that have obtained NRT funding from NSF. The MS IUX is part of WPI's interdisciplinary *Future of Robots in the Workplace – Research & Development (FORW-RD)* NRT program, which prepares its MS and PhD students to design and develop advanced robot assistants for workplaces. All courses in the IUX core (MIS 583, 585, 586) are part of the NRT program. Students in this NRT program should select the System Design for IUX specialty and, within this specialty, select at least one of RBE/CS 526, RBE 595, WR 593 and select the IUX Research specialty to do an MS thesis.

Additional Requirements:

- On-campus, international students are encouraged to complete up to three additional credits of internship to ensure their readiness for employment in the U.S.
 - BUS 5900 Internship (0-3 credits)

New Course Descriptions:

No new courses are being proposed.

Revised Course Descriptions (and Titles) for Existing Courses

No changes in courses descriptions or titles.

Rationale: *(Explain the need for the degree or program, and the value of offering it.)*

This revision makes the MS IUX program consistent with other FBS MS programs.

Opportunity and Market Analysis: *(An assessment of the need for the program and potential student interest.)*

Program was launched in Fall 2018. This is a restructuring into a stackable design, with little change to the programs content. Thus, no expected change in opportunities.

Comparison to Existing Programs at WPI:

This motion is a revision of our current MS IUX program. It maintains the same quality and rigor of the current degree.

Impact on Existing Programs at WPI:

We expect no impact on existing programs at WPI.

Comparable Programs at other Universities: (if relevant)

N/A

Implementation:**Program Management**

Professor Soussan Djammasbi is program director for the MS IUX program. Further oversight of the program is the responsibility of our Specialty MS Policy and Curriculum Committee (SPCC), which manages the FBS specialty MS programs, current chair Professor Sharon Johnson. Changes to the program, student petitions, etc. will all go through this committee.

Implementation Date

Targeted start for implementation is Fall 2021.

Transition Plans

Current students in the MS IUX program will be able to continue with the current program until they graduate because all the courses are still available.

Resources Required:

No new resources are required because there are no new courses.

A financial plan is not required but may be included.

This revision is expected to have no effects on costs, but should provide additional revenues by being offered online.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Rolle, Chair)
Re: Motion to approve removal from the catalog of an existing graduate program, **MS in Supply Chain Management (SCM)**. (*Approved, Foisie Business School on Feb 18, 2021*)

Motion: The Committee on Graduate Studies and Research recommends, and I move that the existing graduate program, **Master of Science in Supply Chain Management**, be removed from the Graduate Catalog.

Proposed Modifications to Graduate Catalog: Remove all information about the MS SCM program for the graduate catalog for the AY21-22 catalog.

Rationale: The FBS is revising the MS in Operations Management and Analytics (OAM) (retitled: MS in Operations and Supply Chain Analytics (OSCA)) to have a stackable structure that will allow interested students to build depth in supply chain topics. Currently, MS OAM and MS SCM have considerable overlap; offering a single degree will support more effective recruiting and efficiency in program management.

Impact on Degree Requirements: Removing the MS SCM program will not affect other programs. All current courses will continue to be offered.

Implementation Date: Implementation date for this action is the 2021-2022 academic year. Current students in the MS SCM program and any students accepted for Fall 2021 will be able to complete the program because the courses needed to complete the degree are still being offered. Students may also chose to transfer with no penalty or cost to the MS in Operations and Supply Chain Analytics degree.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Rolle, Chair)
Re: Motion to Make All 4000-level CS Classes Eligible for B.S./M.S. Credit

Motion: The Committee on Graduate Studies and Research recommends, and I move that the requirements for the B.S./M.S. program in Computer Science be modified as described below.

Description of changes to the WPI Graduate Catalog:

On page 83 of the Graduate Catalog, the requirements for the B.S./M.S. credit are listed. This motion would alter the requirements as follows. Additions are indicated in *underlined italics* (with deleted text indicated by ~~strikethroughs~~).

The CS department allows *all CS* ~~only selected~~ 4000-level undergraduate course credits to count towards the B.S./M.S. *Further, with the permission of the instructor and either the Graduate Committee or the Department Chair, 4000-level Undergraduate Independent Studies may also be counted towards the B.S./M.S.* ~~The CS 4000-level course credits that may be counted towards both degrees are:~~

- ~~• 4100, 4120, 4123, 4233, 4241, 4341, 4401, 4404, 4432, 4445, 4513, 4515, 4516, 4518, 4533, 4536, 4731, 4732, 4802, 4803~~
- ~~• 4000-level Undergraduate Independent Studies, with permission of instructor and either the Graduate Committee or the Department Chair~~

Rationale:

When current, the list of CS 4000-level courses routinely excludes only two courses, CS 4032 and CS 4033, from receiving B.S./M.S. credit. In the 2019-2020 academic year, the department faculty asked for a further exploration into those two courses to determine whether they should remain CS 4000-level courses and whether they should be B.S./M.S.-eligible. The department's Graduate and Research Committee asked the department's Undergraduate Committee to explore the issue. The Undergraduate Committee did so and recommended that the courses remain at the 4000-level and that they be eligible for the B.S./M.S. program. Despite these courses being cross-listed as 3000-level math courses, the undergraduate committee determined they warrant both 4000-level and graduate credit for CS majors. The department's Graduate and Research Committee concurred with this recommendation, which would make all CS 4000-level courses eligible. Further, the Graduate and Research Committee has approved petitions to count these CS 4000-level courses towards the B.S./M.S. program.

From a logistical standpoint, experimental and permanent CS 4000-level classes are added to the catalog. Eventually, it is noticed that these courses do not have B.S./M.S. eligibility and petitions are approved until they are formally added to the graduate catalog. Since department practice has historically added such courses, this process would simplify the administration and automatically make any such new courses eligible by default.

The Computer Science Department faculty voted to approve this motion at their February 9, 2021 department meeting.

Resource Impact: No additional resources are required.

Implementation Date: AY 2021-2022 Catalog.

Date: March 4, 2021

To: WPI Faculty

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

Re: Motion to Adjust Computer Science M.S. and Ph.D. Credits Requirements

Motion: The Committee on Graduate Studies and Research recommends, and I move that the requirements for the M.S. and Ph.D. degrees in Computer Science be modified as described below.

Description of changes to the WPI Graduate Catalog:

Beginning on page 81 of the Graduate Catalog, the requirements for the M.S. and Ph.D. are listed. This motion would alter the requirements as follows. Additions are indicated in *underlined italics* (with deleted text indicated by ~~strike throughs~~).

Degree Requirements

For the M.S.

The M.S. program in Computer Science requires ~~33~~ 30 credit hours of work. Students may select a non-thesis option or a thesis option, which requires a 9-credit thesis. Each student should carefully weigh the pros and cons of these alternatives in consultation with his or her advisor prior to selecting an option, typically in the second year of study. The department will allow a student to change options only once. All entering students must submit a plan of study identifying the courses to be taken. The plan of study must be approved by the student's advisor and the CS Graduate Coordinator, and must include the following minimum requirements:

1. Computer Science Breadth Requirement (12 credits)

M.S. students are required to achieve a passing grade in courses from four different bins, including at least three essential bins. The eleven bins are listed below, together with their corresponding courses.

Essential Bins (9 credits)

- **Theory** (3 credits): 5003, 503, 521, 559
- **Algorithms** (3 credits): 5084, 584, 504
- One course from either Bin: (3 credits)
 - **Systems**: 502, 533, 535
 - **Networks**: 513, 528, 529, 530, 577, 558

Breadth Bins (3 credits)

- **Design**: 509, 546, 562
- **Compilers/Languages**: 536, 544
- **Graphics/Imaging**: 543, 545, 549, 563, 573
- **AI**: 534, 538, 539, 540, 541, 548, 549, 566
- **Databases**: 542, 561, 585, 586
- **Cybersecurity**: 557, 558, 564, 571, 578, 673
- **Applications of CS**: 526, 565, 567, 568, 582, 583

Courses with a 5000 number (e.g., 5003, 5084) are preparatory courses, designed specifically for students with insufficient background knowledge or skills. Graduate credit can be earned for these course and M.S. students may use them to satisfy bin requirements. However, students with a solid undergraduate degree in CS are strongly encouraged to take more advanced courses within the bins. *Note: B.S./M.S. students may satisfy this breadth requirement with fewer than 12 credits because of the credit conversion rate as described on page 21.*

2. Computer Science Electives (24 18 credits)

M.S. students must complete sufficient course work selected from CS courses at the 500-level or independent study. With the permission of the academic advisor, a student may take a total of at most six graduate credits from outside of Computer Science towards the M.S. degree. Courses in college teaching may not be counted towards the ~~33~~ 30 credits required for a CS Master's degree.

Thesis Option

A thesis consisting of a research or development project worth a minimum of 9 credit hours must be completed and presented to the faculty. A thesis proposal must be approved by the department by the end of the semester in which a student has registered for a third thesis credit. Proposals will be considered only at regularly scheduled department meetings. Students funded by a teaching assistantship, research assistantship or fellowship must complete the thesis option.

Non-thesis Option

A total of at least ~~33~~ 30 credit hours must be satisfactorily completed, including four courses which satisfy the Breadth Requirement. Students should endeavor to take these four courses as early as possible so as to provide the background for the remaining graduate work.

The ~~n~~Non-thesis option is not applicable to students funded by a teaching assistantship, research assistantship or fellowship.

For the Ph.D.

Students are advised to contact the department for detailed rules, as there are departmental guidelines, in addition to the university's requirements, for the Ph.D. degree.

Upon admission, the student is assigned an academic advisor and together they design a Plan of Study during the first semester of the student's Ph.D. program.

The student must satisfy the Ph.D. Qualifying Requirement, consisting of the Breadth Requirement and the Research Qualifying Requirement. These requirements are described in the Graduate Regulations on the CS department website <https://web.cs.wpi.edu/Intranet/Graduate/guide.html>.

Upon successful completion of the Ph.D. qualifying requirement, the student becomes a computer science Ph.D. candidate. The student's Dissertation Committee must be formed within the first year of candidacy. The student selects a research advisor from within the CS department, and together they select, with the approval of the CS Graduate Committee, three additional members, at least one of whom must be from outside the WPI CS department. The Dissertation Committee will be responsible for supervising the comprehensive examination, and approving the dissertation proposal and final report.

The Ph.D. degree requirements consist of a coursework component and a research component, which together must total at least 60 credit hours beyond the master's degree requirement ~~for Ph.D. students who earned a MS degree in a program other than CS at WPI. For students who earned a MS degree in CS at WPI during the period when that MS degree program required 33 credits, t~~The coursework and research component *for the Ph.D. degree* must total at least 57 credit hours ~~for students who earn both a master's degree and Ph.D. degree in CS at WPI.~~

Rationale:

In the graduate catalog on page 20, the following text appears:

General Requirements for the Master of Science and Master of Engineering

The student must obtain a minimum of 30 credit hours of acceptable course, thesis or project work.

The current Master of Science in Computer Science degree requires 33 credits. However, recently introduced degrees, such as the Master of Computer Science and the Master of Science in Cyber Security, are 30-credit degrees. Further, the Master of Science in Data Science has transitioned from a 33-credit degree to a 30-credit degree. In reviewing the Graduate Catalog, the CS department found that around 67% of master-level degrees are 30-credit degrees. Of the non-30-credit degrees, most are related to management and the Foisie School of Business, leaving few non-business disciplines requiring more than 30 credits for a Master's degree. In the absence of clear pedagogical motivation for a 33-credit degree, the CS Department voted to change the credit required to 30 credits to remain competitive with related degree programs.

The changes update instances of the M.S. degree credit totals to reflect the new 30-credit requirement. Further, the language in the Ph.D. degree description that adjusted for the 33-credit M.S. degree has been revised to continue to match the Ph.D.-60 and Ph.D.-90 designations.

The Computer Science Department faculty voted to approve this motion at their February 9, 2021 department meeting.

Resource Impact: No additional resources are required. A decrease in tuition revenue for the M.S. in Computer Science may occur given that 3 fewer graduate credits are required.

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

Date: March 11, 2021
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Rolle, Chair)
Re: Motion to reduce the number of M.S. Degree Credits from 33 to 30.

Motion: The Committee on Graduate Studies and Research recommends, and I move that the number of required credits for the M.S. degree in Data Science be reduced from 33 to 30 graduate credits.

Summary

The current M.S. degree in Data Science requires the completion of 33 credits, which must satisfy the following requirements:

- 1- Core Course Requirements (15 credits)
 - a. Introduction to Data Science (3 credits)
 - b. Mathematical Analytics (3 credits)
 - c. Data Access & Management (3 credits)
 - d. Data Analytics & Mining (3 credits)
 - e. Business Intelligence & Case Studies (3 credits)
- 2- Capstone Requirement (between 3 to 9 credits)
 - a. Graduate Qualifying Project (GQP) (3-6 credits), or
 - b. Thesis (9 credits)
- 3- Concentration and Electives (between 9 to 15 credits to complete the rest of the 33 credits;)

We propose to **reduce the number of required graduate credits from 33 to 30 credits by taking away 3 credits from the “Concentration and Electives” requirement.** The other requirements, i.e., the Core Course and Capstone Requirements, remain intact.

Rationale:

The Data Science program at WPI was among the first programs nationwide to offer M.S. and Ph.D. degrees to meet the unprecedented market demand for data scientists. Since its establishment in 2014, the M.S. Data Science program has become well-known for its unique combination of offerings, including a top-notch curriculum, true interdisciplinarity, and heavy engagement with industry. Despite strong competition from other universities over the last six years, the Data Science program has consistently maintained its high-quality reputation and its appeal to many applicants worldwide. On average, the M.S. program attracts each year around 400 applications and welcomes a cohort of around 50 students. In order to continue this steady success, to maintain the competitiveness of the program, and, hopefully, to expand on its success, we propose to revise the M.S. degree requirements by reducing the number of required credits to 30 credits instead of the current 33 credits.

The rationale behind this motion is:

- As listed in Table 1 in the appendix section, most M.S. degrees at WPI across other departments and programs (mostly apart from the Foisie Business School) require 30 credits. This change thus puts the Data Science degree in line with most of the other degrees at WPI.
- Due to the strong demand of data scientists by industry, over the past 5 years a large number of universities across the country, including Columbia University, University of California at Berkeley, Stanford University, and many others also began to offer M.S. degrees in Data

Science. This also includes the universities in the Greater New England area including Brown University, University of Massachusetts at Amherst, Boston University, Brandeis University, Northeastern University, and others. We note that a good number of these universities offer degrees that can be completed in less than 2 years, and often even within one year. As an example, Brown University offers a degree that can be completed in 16 months and for exceptional students in 9 months, University of Massachusetts at Amherst offers the degree at 10 courses, Boston University offers the degree at 10 courses, Brandeis University offer a 30 credit “Strategic Analytics” degree, and Northeastern University offer the degree at 30 credits. There is evidence that students, in particular domestic students, are interested in completing an MS degree within a compressed time schedule. The higher number of credits for the WPI degree, especially considering the fact that the WPI cost per credit hour is higher than the average and median of other regional universities, is a clear disadvantage. The three-credit reduction would make the load of our degree comparable to others, and would reduce the financial burden on students, which will hopefully attract more students. This would increase WPI’s competitiveness in recruiting students.

- The pedagogical integrity and quality of the M.S. program will remain intact. The students will acquire the same depth and breadth of skills and build the same background that prepares them for the job market. The interdisciplinary nature of the program is maintained through the core course requirements. The industry engagement remains intact through the rich capstone GQP project experience and possible internships. Moreover, for less-prepared students who lack certain backgrounds in computing or statistics, the program will remain suitable through the available bridge courses that are part of the elective courses.
- The credit reduction will not result in any major structural change in the degree since the reduction is only in the elective courses. The other requirements remain unchanged.
- This change should help attract more BS/MS students, especially with the undergraduate major in Data Science at WPI having started in 2020. Under the current M.S. degree of 33 credits, the BS/MS students could in practice double count 12 credits towards their M.S. degree. With the reduction to 30 credits, they will still be able to double count up to 12 credits, which corresponds to 40% of the total credits of the MS program. As bonus, they will be left with a smaller number of credits to complete the BS/MS degree. We therefore expect to see more students being able to complete their BS/MS in 4.5 years instead of 5 years.
- This shortened program is also expected to appeal to a broader range of potential students, especially US citizens and professionals. With a 30-credit program, it is feasible for students to finish it in 1.5 years (3 academic semesters plus a summer course or an internship) instead of requiring two full years.
- International students will continue to have the opportunity to spread the 30 credits over two full years, if desired. For example, they could take 9 credits in Fall, 9 credits in Spring, 6 credits in Fall and 6 credits in Spring – while staying on a valid student visa. This would continue to give them the opportunity to partake in one or more internships either in the summer or in the second year. However, if they opt to, the reduction to 30 credits would also give them the chance to fast-track the degree and finish in 1.5 years.
- WPI is working on a partnership with Keypath Corporation (for marketing) rolling out three online computational degree programs, an MS in Computer Science and an MS in Cybersecurity, along with our existing MS in Data Science. The first two degrees, which are currently going through the WPI approval process, are both 30-credit degree programs. This

represents a mismatch for the trifecta of online offerings that would be elegantly addressed by this motion as well.

Proposed Modifications to Graduate Catalog:

The changes to the graduate catalog are highlighted below. The replaced text is highlighted in blue with strikethrough line, and the new text is highlighted in red.

The 1st paragraph under Section “Degree Requirements for the M.S. Degree” (Page 91)

“Students pursuing the M.S. degree in Data Science must complete a minimum of ~~33~~ 30 credits of relevant work at the graduate level. These ~~33~~ 30 credits must include the core coursework requirements in Data Science (see below) and either a 3-credit Graduate Qualifying Project (GQP) or a 9-credit M.S. thesis. These M.S. degree requirements have been designed to provide a comprehensive yet flexible program to students who are pursuing an M.S. degree exclusively and also students who are pursuing a combined B.S./M.S. degree.”

The following table in Page 91

**The Data Science M.S. Degree
(GQP Project-based)**

Graduate Qualifying Project
(3 credits)

Concentration and Electives (~~15~~ 12 credits)

Mathematical Analytics (3 credits)
Data Access & Management (3 credits)
Data Analytics & Mining (3 credits)
Business Intelligence & Case Studies (3 credits)
Introduction to Data Science (3 credits)

The following table in Page 91

**The Data Science M.S. Degree
(M.S. Thesis based)**

M.S. Thesis
(9 credits)

Concentration and Electives (~~9~~ 6 credits)

Mathematical Analytics (3 credits)
Data Access & Management (3 credits)
Data Analytics & Mining (3 credits)
Business Intelligence & Case Studies (3

credits) Introduction to Data Science (3 credits)
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The 1st paragraph under Section “Electives and Areas of Concentration” (Page 92)

“(9-15 6-12 credits)

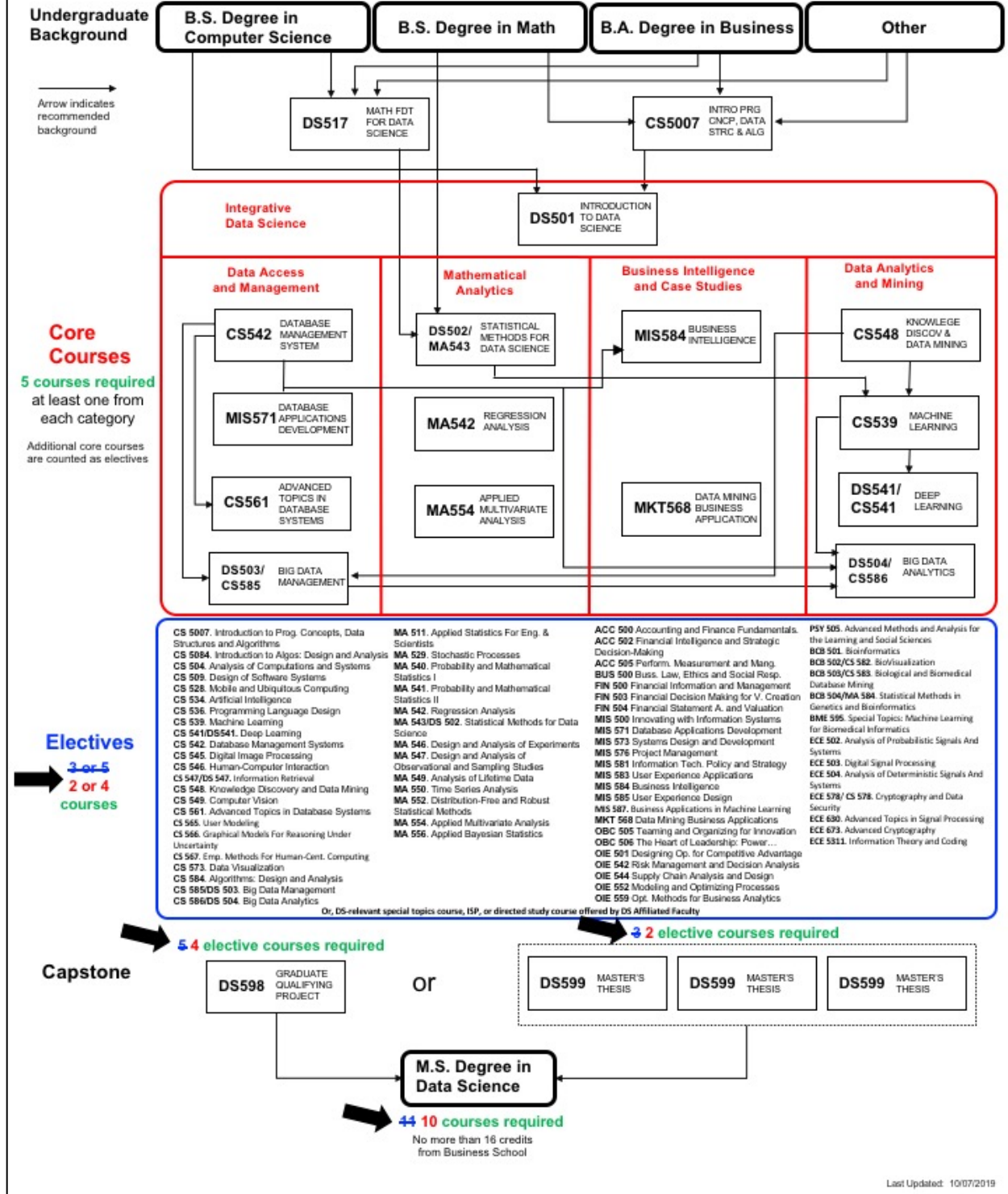
A student seeking an M.S. in Data Science program must take course work from the Program electives listed below in order to satisfy the remainder of the ~~33~~ 30 credit requirement. An elective may be any of these graduate-level courses, with the restriction that no more than ~~16~~ 14 credits of the ~~33~~ 30 credit Data Science degree program may be courses offered by the School of Business.”

The 1st paragraph under Section “For the B.S./M.S.” (Pages 93-94)

“The requirements for the proposed M.S. in Data Science are structured so that undergraduate student would be able to pursue a five-year Bachelor’s/Master’s program, in which the Bachelor’s degree is awarded in any major offered at WPI and the Master’s degree is awarded in Data Science. Students enrolled in the B.S./M.S. program must satisfy all the program requirements of their respective B.S. degree and all the program requirements of the M.S. degree in Data Science. WPI allows the double counting of up to 12 credits for students pursuing a 5-year Bachelor’s/Master’s program. This overlap can be achieved through the following mechanisms. Students may double-count courses towards both their undergraduate and graduate degrees whose credit hours total no more than 40 percent of the ~~33~~ 30 credit hours required for the M.S. degree in Data Science, and that meet all other requirements for each degree. These courses can include graduate courses as well as certain undergraduate 4000-level course as long as the undergraduate course is acceptable in place of a corresponding graduate course that satisfies a Data Science M.S. requirement.”

The course chart (Page 95)

Data Science Graduate Course Chart



The last paragraph in the 2nd column under Section “For the Ph.D.” (Page 96)

“The Ph.D. degree requirements consist of a coursework component and a research component, which together must total at least 60 credit hours beyond the master’s degree requirement ~~for Ph.D. students who earned their MS degree in a program other than Data Science at WPI. The coursework and research component must total at least 57 credit hours for students who earn both a master’s degree and Ph.D. degree in Data Science at WPI.~~ The coursework component consists of at least 30 coursework credits, as specified on the Data Science program website <https://www.wpi.edu/academics/departments/data-science>.”

Implementation Date: 2021-2022 academic year

APPENDIX

Table 1: Listing WPI M.S. degrees with the required credits

MS DEGREE	THESIS/NON-THESIS OPTIONS	Has ONLINE PROGRAM	MINIMUM CREDIT REQUIREMENTS	COMMENTS
Aerospace Engineering	Thesis/Non-thesis	No	30	credits are the same for either thesis or program
Applied Mathematics	Thesis/project/practium	No	30	complete thesis or project in cooperation with a faculty member- Credits are the same for either thesis or project or practium
Applied Physics/Physics	Thesis/Non-thesis	No	30	students can petition to switch to thesis program
Applied Statistics	Thesis/project/practium	No	30	Additional credits may be required
Biochemistry	Thesis/Non-thesis	No	30	
Bioinformatics& Computational Biology	Thesis	No	33	Thesis work or internship (6-9 credits)
Biology/Biotechnology	Thesis	Yes	30	
Biomedical Engineering	Thesis or project	No	30	
Biomedical Engineering (MEng)	Thesis or project	No	30	credits are the same for either thesis or program
Bioscience Management	Non-thesis	Yes	30	online program only and does not offer a thesis option
Biotechnology	Non-thesis	No	30	Skills-based program
Business (MBA)		Yes	36	
Business Analytcs (MSBA)	Capstone Project	Yes	33	
Chemical Engineering	Thesis/Non-thesis	No	30	Thesis option- 12 credits of thesis work. Non-thesis max. 6 credits of independent study
Chemical Engineering (professional option)	GQP	No	30	6 credits in GQP
Chemistry	Thesis/Non-thesis	Yes	30	
Civil Engineering (ME)	N/A	No	30	
Civil Engineering (MS)	research/project work or non-thesis	No	30/33	Non-thesis program has a min. of 33 credits
Computer Science	Thesis/Non-thesis	Yes	33	credits are the same for either thesis or program
Construction Project Management	research/project work or non-thesis	Yes	30/33	Non-thesis program has a min. of 33 credits
Electrical & Computer Engineering (ME)	Non-thesis	No	30	
Electrical & Computer Engineering (MS)	Thesis/Non-thesis	Yes	30	
Environmental Engineering	research/project work or non-thesis	Yes	30/33	non-thesis program has a min. of 33 credits
Financial Mathematics	Captstone project- 3 options	No	30	encouraged to complete summer interships at financial firms
Fire Protection Engineering	Thesis/Non-thesis	Yes	30	9 credits of thesis can be replaced by 9 credits of course work
Industrial Mathematics	Project and Seminar	No	30	Credits are the same for either option. This is a practice-oriented program for industrial professionals
Information Technology (MSIT)	Capstone Project	Yes	33	
Innovation with User Experience (MSIUX)	N/A	No	36	
Interactive Media & Game Development	Thesis or project	No	30	
Interactive Media & Game Development (MFA)	Project	No	51	
Learning Sciences & Technologies	Thesis/Non-thesis	No	33	
Management (MSMG)	N/A	No	30	
Manufacturing Engineering	N/A	Yes	30	
Marketing & Innovation (MSMI)	N/A	No	36	
Material Science & Engineering	Thesis or capstone	Yes	30	Thesis option- min. 6 credits. Capstone option- 3 credits for capstone and take a 3 credit course
Mathematics for Educators (MME)	Project	No	30	Two programs one designed for Middel School math teachers and another one for secondary math teachers
Mechanical Engineering	Thesis/Non-thesis	Yes	30	Thesis option- 12 credits of thesis research. Non-thesis credit hours are increased in areas of study
Neuroscience	Thesis/Non-thesis	No	31	Thesis option- 9 credits of thesis work. Non-thesis option-additional courses or 3-6 credit research or practice-oriented internship.
Operations Analytics & Management	N/A	No	36	
Power Systems Engineering	Non-thesis	online only	30	take 10 courses, 30 credit hours
Power Systems Management	Non-thesis	online only	30	take 10 courses, 30 credit hours
Robotics Engineering	Thesis/Non-thesis	No	30	Thesis option- 9 credits of thesis work. Non-thesis option- 3-credit capstone design/practicum
Science and Technology for Innovation in global Development	GQP/MS Thesis	No	30	GQP or Thesis work- 3-9 credits
Supply Chain Management (MSSCM)	N/A	No	36	
Systems Dynamics	Non-thesis	No	30	take 10 courses, 30 credit hours
Systems Dynamics & Innovation Management	GQP/MS Thesis	No	33	GQP- 3-credit or 9-credit of research thesis
Systems Engineering	Capstone Project	Yes	30	take 10 courses, 30 credit hours
Systems Engineering Leadership	Non-thesis	Yes	30	take 10 courses, 30 credit hours
Systems Modeling	Non-thesis	No	30	take 10 courses, 30 credit; can earn up to 6-credits in project work with a faculty

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to waive the M.S. degree requirement of the *Integrative Data Science Core Area* for students who are completing or have completed B.S. degree in the WPI Data Science program.

Motion: The Committee on Graduate Studies and Research recommends, and I move, that the requirement of fulfilling the *Integrative Data Science core area*, which is one of the M.S. degree requirements in Data Science, to be waived for the students who are completing (B.S./M.S.) or have completed their undergraduate major in the WPI Data Science program.

Summary:

One of the requirements of the M.S. degree in Data Science is to take at least 3 credits from each of five core areas, one of them is “*Integrative Data Science*” core area (3 credits). There is only one course under this core area, which is DS 501 “*Introduction to Data Science*”, hence all M.S. Data Science students must take this course.

We propose to **waive the “Integrative Data Science” core area requirement** for: (1) The **B.S./M.S. students in Data Science who are completing their undergraduate major in the same program** (i.e., the WPI Data Science program), and (2) The **M.S. students who have completed their B.S. in the WPI Data Science program**. These students can earn the corresponding 3 credits from any of the data science courses listed in the graduate catalog, including DS 501 if they opt to take it.

Rationale:

One of the program’s strategic goals is to attract more students to the Data Science program. With the start of the Data Science undergraduate major in 2020, we are keen in building a steady pipeline of students from our Data Science major to pursue M.S. in Data Science, either as B.S./M.S. students or as returning M.S. students. Such pipeline will help increasing the diversity of the graduate program with our well-trained and high-quality WPI students.

To make the M.S. degree in Data Science more appealing, and to streamline the process, to this targeted group of students, namely **students who are completing or have completed their B.S. major in the WPI Data Science program**, we propose waiving one of the M.S. degree requirements, which we consider as redundant for this specific group of students. More specifically, we propose waiving the “*Integrative Data Science*” core area requirement (the DS 501 course) for these students. The reason is that our Data Science B.S. students are guaranteed to master all the material and content of DS 501 during their undergraduate major. Therefore, mandating them to take DS 501 would not be of the students’ best interest nor the Data Science program.

Under the current M.S. rules, these students have to submit a petition to waive the requirement of taking DS 501 and to replace it with another course(s). This motion is to streamline the process and allow these students to automatically use the 3 credits assigned to this requirement for any other data science course(s) listed in the graduate catalog, including DS 501 if they opt to take it.

Proposed Modifications to Graduate Catalog and Website:

The changes to the graduate catalog and the website are highlighted below (the change is highlighted in red and underlined):

The paragraph under Section “Core Data Science Coursework” (Pages 91-92)

Requirement (15 credits)

“Students in the M.S. program must take both courses in the Integrative Data Science category and one (1) course from each of the other core Data Science categories listed below:”

<<listing of the 5 core areas and the courses under each area>>

“If a student has completed a B.S. degree in Data Science at WPI, then the “Integrative Data Science” core area requirement is waived. Instead, the student can earn the corresponding 3 credits by taking any of the data science courses listed in the graduate catalog, including DS 501.

*If a student does not have prior background in a particular core category, then it is advised that the student take the course with an asterisk * in the title within that category. If two or more courses have an asterisk *, then the student may select either of these courses based on their personal interest and background. Students must take at least 1 course in each of these core areas, but are encouraged to take several. Additional courses taken in a core category will count as electives and/or concentration courses as described below.”*

1st paragraph under Section: “For the B.S./M.S.” (Page 93)

*“The requirements for the proposed M.S. in Data Science are structured so that undergraduate student would be able to pursue a five-year Bachelor’s/Master’s program, in which the Bachelor’s degree is awarded in any major offered at WPI and the Master’s degree is awarded in Data Science. Students enrolled in the B.S./M.S. program must satisfy all the program requirements of their respective B.S. degree and all the program requirements of the M.S. degree in Data Science. **For students who will earn the Data Science B.S. degree at WPI, the “Integrative Data Science” core area requirement is waived. Instead, the students can earn the corresponding 3 credits by taking any of the data science courses listed in the graduate catalog, including DS 501.***

WPI allows the double counting of up to 12 credits for students pursuing a 5-year Bachelor’s/Master’s program. This overlap can be achieved through the following mechanisms. Students may double-count courses towards both their undergraduate and graduate degrees whose credit hours total no more than 40 percent of the 33 credit hours required for the M.S. degree in Data Science, and that meet all other requirements for each degree. These courses can include graduate courses as well as certain undergraduate 4000-level course as long as the undergraduate course is acceptable in place of a corresponding graduate course that satisfies a Data Science M.S. requirement.”

Implementation Date: 2021-2022 academic year

Date: March 11, 2021
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Rolle, Chair)
Re: Motion to add course: MIS 587 “Business Applications in Machine Learning” as a core Data Science course.

Motion: The Committee on Graduate Studies and Research recommends, and I move, that the course *MIS 587 “Business Applications in Machine Learning”* from the Foisie Business School be added as a core course under the core area of “Business Intelligence and Case Studies”.

Summary:

One of the degree requirements of the M.S. degree in Data Science is to take at least 3 credits from each of five core areas, which are:

- a. Integrative Data Science (3 credits)
- b. Mathematical Analytics (3 credits)
- c. Data Access & Management (3 credits)
- d. Data Analytics & Mining (3 credits)
- e. Business Intelligence & Case Studies (3 credits)

There are currently two courses under the core area of “Business Intelligence & Case Studies”, which are: (1) MIS 584 Business Intelligence, and (2) MKT 568 Data Mining Business Application. Both courses are offered by the Foisie Business School, and either of them could satisfy the requirement of this core area.

We propose adding *MIS 587 “Business Applications in Machine Learning”, which is worth 3 credits to the core area of “Business Intelligence & Case Studies”.*

Rationale:

The *Business Applications in Machine Learning* course offers sufficient content related to machine learning and artificial intelligence techniques and how they are applied to solve business problems. Hence, this course is a good candidate to meet the requirements of the Business Intelligence and Case Studies core area.

Currently, students taking this course need to submit a petition to the Data Science program, and we approve all these petitions. This motion removes this unnecessary step.

As stated in the course syllabus, the course prerequisite is only *basic knowledge of programming*. Therefore, the course will not have prerequisites to other courses within the same core area.

Proposed Modifications to Graduate Catalog and Website:

The changes to the graduate catalog and the website are highlighted below (the change is highlighted in red and underlined):

The 1st column, paragraph “Business Intelligence and Case Studies” (Page 92)

Business Intelligence and Case Studies

(Select one):

**MIS 584. Business Intelligence*

MKT 568. Data Mining Business Applications

MIS 587 Business Applications in Machine Learning

Under Section “Relevant Business Graduate Courses” (Pages 92-93)

Adding MIS 587 to the list

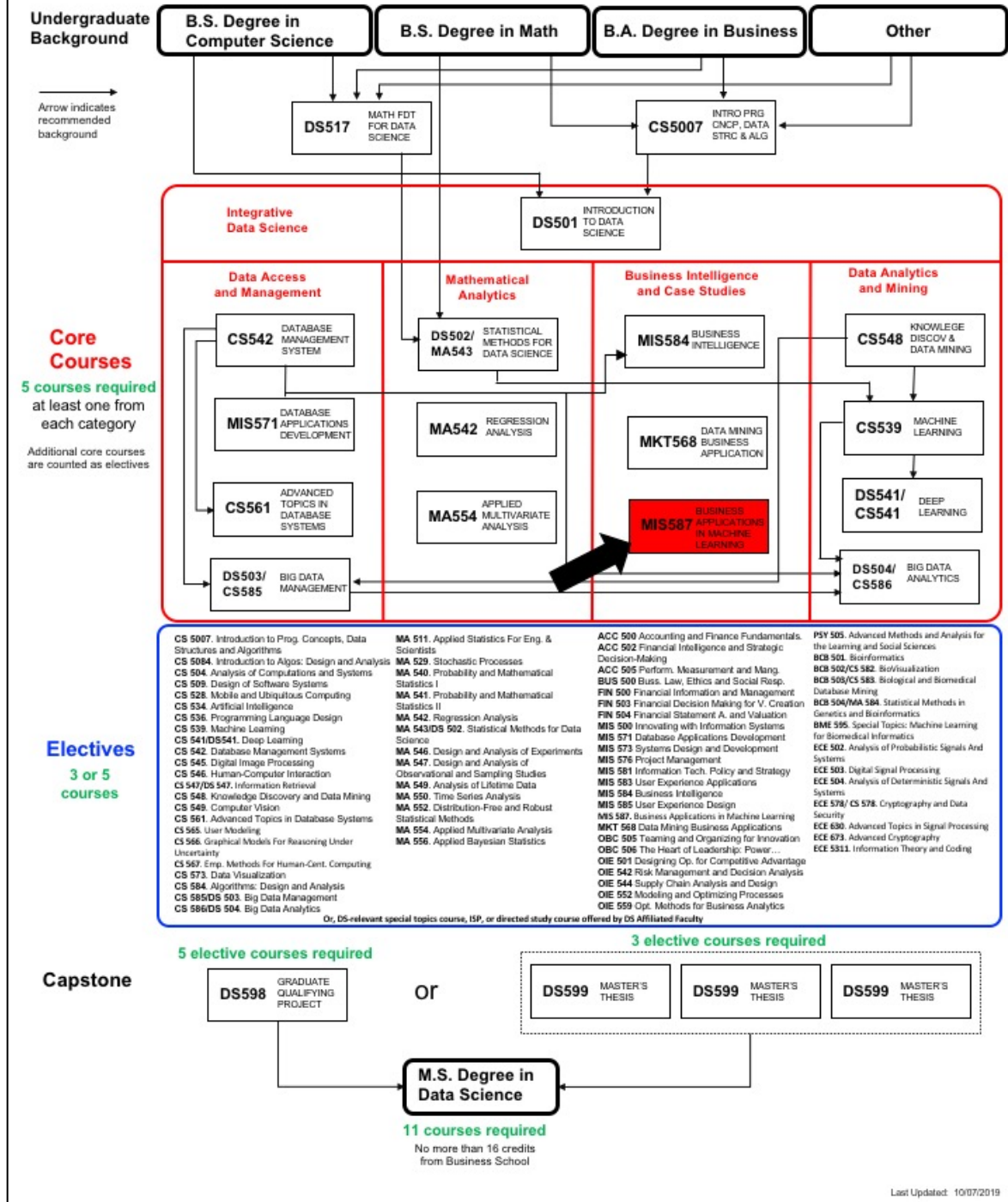
...

MIS 587 Business Applications in Machine Learning

...

The course chart (Page 95)

Data Science Graduate Course Chart



Implementation Date: 2021-2022 academic year

Date: March 11, 2021

To: WPI Faculty

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

Re: Motion to change the course description for ME/RBE 501 Robot Dynamics, as previously approved by both the Robotics Engineering Department (5/1/2020) and the Mechanical Engineering Departments (12/7/2020).

Motion: The Committee on Graduate Studies and Research recommends, and I move that the following catalog changes for the course description of ME/RBE 501 be approved.

Current description

RBE 501. Robot Dynamics

Foundations and principles of robotic manipulation. Topics include computational models of objects and motion, the mechanics of robotic manipulators, the structure of manipulator control systems, planning and programming of robot actions. The focus of this class is on the kinematics and programming of robotic mechanisms. Important topics also include the dynamics, control, sensor and effector design, and automatic planning methods for robots. The fundamental techniques apply to arms, mobile robots, active sensor platforms, and all other computer-controlled kinematic linkages. The primary applications include robotic arms and mobile robots and lab projects would involve programming of representative robots. An end of term team project would allow students to program robots to participate in challenges or competitions. (Prerequisite: RBE 500 or equivalent.)

Revised description

RBE 501. Robot Dynamics

Foundations and principles of robot dynamics. Topics include system modeling including dynamical modeling of serial arm robots using Newton and Lagrange's techniques, dynamical modeling of mobile robots, introduction to dynamics-based robot control, as well as advanced techniques for serial arm forward kinematics, trajectory planning, singularity and manipulability, and vision-based control. In addition, dynamic simulation techniques will be covered to apply the concepts learned using realistic simulators. An end of term team project would allow students to apply mastery of the subject to real-world robotic platforms. (Prerequisite: RBE 500 or equivalent.)

Rationale:

RBE 501 is the second of a sequence of three foundational graduate courses in robotics – the other two courses in the sequence are RBE 500 Foundations of Robotics and RBE 502 Robot Control. The curriculum of RBE 500 has been recently redesigned as an on-ramp class for RBE 501/502 to include robot kinematics thoroughly. In addition, control topics are covered thoroughly in RBE 502. Therefore, considering the fact that RBE 500 and RBE 502 are covering Kinematics and Control, respectively, the curriculum of RBE 501 is redesigned to:

1. Identify and eliminate duplicate Kinematics and Control topics between RBE 501 and RBE 500/502.
2. Cover and focus on advanced Dynamics topics to better prepare students for solving real-world robotic platforms' dynamics.

The proposed new description reflects the aforementioned objectives.

Impact on Degree Requirements: None.

Resources and Anticipated Instructors: No additional resources are required.

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

Date: March 11, 2021
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Rolle, Chair)
Re: Motion to change the course description for RBE 502 Robot Control, as previously approved by the Robotics Engineering Program on May 1, 2020.

Motion: The Committee on Graduate Studies and Research recommends, and I move that the following catalog changes for the course description of RBE 502 be approved.

Current description

RBE 502. Robot Control

This course demonstrates the synergy between the control theory and robotics through applications and provides an in-depth coverage of control of manipulators and mobile robots. Topics may include kinematic and dynamic models, trajectory and motion planning, feedback control, compliance and force control, impedance control, control of redundant manipulators, control of underactuated robots, adaptive robot control, integrated force and motion control, digital implementation of control laws, model identification and parameter estimation techniques. Course projects will emphasize modeling, simulation and practical implementation of control systems for robotic applications. (Prerequisites: Linear algebra; Differential equations; Linear systems and control theory as in ECE 504 or consent of the instructor.)

Revised description

RBE 502. Robot Control

This course demonstrates the synergy between the control theory and robotics through applications and provides an in-depth coverage of control of manipulators and mobile robots. Topics include linearization, state space modeling and control of linear and nonlinear systems, feedback control, Lyapunov stability analysis of nonlinear control systems, set-point control, trajectory and motion control, compliance and force control, impedance control, adaptive robot control, robust control, and other advanced control topics. Course projects will emphasize simulation and practical implementation of control systems for robotic applications. (Prerequisites: RBE 500 or equivalent, Linear algebra; Differential equations; Linear systems and control theory as in ECE 504 or consent of the instructor)

Rationale:

RBE 502 is the third of a sequence of three foundational graduate courses in robotics – the other two courses in the sequence are RBE 500 Foundations of Robotics and RBE 501 Robot Dynamics. The curricula of RBE 500 and 501 have been recently redesigned with the goal of eliminating duplicate topics between the three courses. The current RBE 500 thoroughly covers Kinematics while RBE 501 thoroughly covers Dynamics. In addition, RBE 500 covers an introduction to control theory. Therefore, RBE 502 is specifically redesigned to:

3. Identify and eliminate Kinematics and Dynamics topics in RBE 502 as they are fully covered in RBE 500/501.
4. Cover and focus on advanced Control topics.
5. Introduce RBE 500 as a prerequisite for RBE 502.

The proposed new description reflects aforementioned objectives.

Impact on Degree Requirements: None.

Resources and Anticipated Instructors: No additional resources are required.

Implementation Date: Implementation date for this action is the 2020-2021 academic year.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Rolle, Chair)
Re: Motion to change course No. from MTE 594 to a permanent No. of MTE 530 for *Computational Thermodynamics*

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

Proposed Course Description:

MTE 530: Computational Thermodynamics

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

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

Expected enrollment: 15-30 students

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

Anticipated Instructor: Prof. Yu Zhong

Rationale:

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

There is currently no existing course in the WPI curriculum specifically focusing on computational thermodynamics, although faculty members in ME, MTE, MFE, AE, CHE, CBC, CEE, FPE, and PH have research interests that directly or indirectly involve computational thermodynamics. This proposed advanced course connects many topics in emerging areas of research, and is therefore appropriate for the graduate level. Students in ME, MTE, MFE, AE, CHE, CBC, CEE, FPE, and PH will potentially be interested in such an offering. This course can help students to find positions in industry that require knowledge related to the design of next-generation materials.

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

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

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

Impact on Degree Requirements:

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

Resources and Anticipated Instructors:

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

Implementation Date:

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

Date: March 11, 2021
To: WPI Faculty
From: Committee on Graduate Studies and Research (Prof. Rolle, Chair)
Re: Repeat policy for graduate students

Motion: The Committee on Graduate Studies and Research recommends, and I move, to change the repeat policy for graduate students to mirror the policy for undergraduate students.

Current policy (page 13 in the 2020-2021 Graduate Catalog, Grade Point Average (GPA) paragraph 1):

If a student takes the same course more than once, the course enters the GPA only once, the most recent grade received for the course being used in the average.

Proposed policy:

If a student takes the same course more than once, the course enters the GPA only once, the ~~most recent~~ *best* grade received for the course being used in the average.

Rationale:

In Spring 2019, the faculty passed a repeat policy for undergraduates, wherein, should a student take a course twice and receive passing grades for both, only the best grade and its associated credit would be counted toward the degree.

While generally graduate students re-taking a class improve the second time, it does occasionally happen that the second grade is worse. Under the current policy, we exclude that first, better grade in favor of the more recent. While the policy is very clear, it is difficult to explain to the affected student, particularly if they know the undergraduate policy. With the growing number of BS/MS students, it makes sense to have these two policies line up, and it is certainly the kinder thing to do for the student.

Implementation:

The 2021-2022 catalog year.

Date: March 11, 2021

To: WPI Faculty

From: Committee on Academic Policy (Prof. Dudle, Chair)
Committee on Graduate Studies and Research (Prof. Rolle, Chair)

Re: Motion to change the degree conferral date (date on diploma) for students completing requirements in a summer

Motion: The Committee on Academic Policy (CAP)/Committee on Graduate Studies and Research (CGSR) recommend, and we move, to change the degree conferral date (date on diploma) for students completing requirements in a summer semester as follows:

Semester of Completion	Deadline for completion of requirements	Degree conferral date
Summer	Last day of Summer semester/E2 (no change)	August 30

Rationale:

In May 2018, a change to the conferral dates for students completing degree requirements in summer and fall semesters was passed by the faculty, changing the conferral date to September 1 and December 30, respectively, from the traditional October and February dates. Overall, this has been a successful change, resulting in all the benefits described in that original motion dated May 8, 2018:

Benefits:

- Graduation dates align with the academic calendar; faculty members advising degree candidates can close out the semester in a timely fashion, before moving on to the next.
- Most students receive their degrees in a much more timely fashion, enabling continued education or employment to proceed.
- WPI is in compliance with federal graduation reporting requirements.
- Elements of risk introduced by students continuing work on campus but not enrolled are mitigated.

Since then, we have learned from our AVP of Institutional Research, who is responsible for IPEDs reporting, that had we chosen a conferral date for the summer semester that was before September 1 we could include those graduating students in the previous academic year's graduation rates. This would improve our 4-year graduation rate. Institutional Research compiled the data below, showing how the 4-year graduation rate would have changed had we been able to report the students completing in the summer as 4-year graduates:

Cohort	4 -Yr Grad Rate		Additional completers
	Reported	Using 8/30	
Class of '19	81%	83%	19

Class of '18	81%	83%	15
Class of '17	82%	85%	27
Class of '16	82%	84%	17
Class of '15	82%	85%	26
Class of '14	80%	82%	18
Class of '13	76%	78%	19
Class of '12	74%	78%	31

Therefore, we recommend changing the summer conferral date to August 30 to support this improved reporting and to provide consistency with the December 30 date for fall completions.

Implementation:

As this date is only two days prior to the current date, no change in procedures are required, beyond using the new date on the diplomas and transcripts. All other processing, including the faculty vote at the first faculty meeting of the academic year, would stay the same.

COMMITTEE BUSINESS

COG Rename the Mechanical Engineering (ME) Department to Mechanical and Materials Engineering (MME) Department	119
CAP Adjust overload policy for C and D 2021 terms	121
CAP Adopt a test-blind undergraduate admissions policy for an eight-year pilot period	123
CAP Revise Distribution Requirements of IMGD Technology (BS) Major	126
CAP Revise Distribution Requirements of IMGD (BA) Major	128

Date: March 11, 2021

To: WPI Faculty

From: Committee on Governance (Prof. Boudreau, chair)

Re: Motion to Rename the Mechanical Engineering (ME) Department to Mechanical and Materials Engineering (MME) Department

Motion

The Committee on Governance recommends and I move that the Department of Mechanical Engineering (ME) be renamed the Department of Mechanical and Materials Engineering (MME).

Background

The ME department consists of the Mechanical Engineering (ME), Materials Science and Engineering (MTE), and Manufacturing Engineering (MFE) programs. Since the Aerospace and Robotics Engineering programs, once housed within ME, became their own departments in July 2020, the ME department now consists of 28 TTTs and 8 NTTs, broken down as follows: ME: 12 TTTs and 8 NTTs; MTE and MFE programs combined: 16 TTTs. The ME department offers the following degrees at the undergraduate and graduate levels,

- B.S. – Mechanical Engineering (enrollment: 903)
- M.S. – Mechanical Engineering (enrollment: 128)
- M.S. – Materials Science & Engineering (enrollment: 28)
- M.S. – Manufacturing Engineering (enrollment: 14)
- M.S. – Materials Process Engineering (enrollment: 8)
- Ph.D. – Mechanical Engineering (enrollment: 28)
- Ph.D. – Materials Science & Engineering (enrollment: 40)
- Ph.D. – Manufacturing Engineering (enrollment: 4)

The above reported enrollment numbers correspond to A-term 2020, with a total 903 undergraduate and 250 graduate students, a large size despite the negative impact of pandemic.

The research strengths in the ME department include nanotechnology and nanomaterials, biomechanics and medical devices, enhancement of heat transfer, additive manufacturing and printed electronics, photonics and opto-mechanics, sensors and metrology, metals processing, batteries and electrochemistry, solar cell materials, recycling, and drying. The department houses two NSF Industry University Cooperative Research Centers, one within the MTE program (CR3 – recycling) and the other within the ME program (CARD – drying). The externally sponsored research awards in ME department exceeded \$17.5M in the last FY.

Rationale

The faculty of ME department voted unanimously on November 24, 2015, to change the department name from ME department to MME department. This name change was also discussed during the ME department annual retreat in May 2020 (virtual) and again received a unanimous approval. The ME department External Advisory Board has also endorsed this name change. With the Aerospace Engineering program currently as a separate department, this name change is very timely. The name change will bring a significant visibility and recognition to our MTE program.

The proposed renaming is in line with the practice at other universities. Specifically, many universities have a double-named Mechanical and Materials Engineering/Science departments (e.g., the University of Cincinnati, University of Pittsburgh, Duke University, Yale University, Washington State University, Harvard University, and Washington University at St. Louis).

The rationale for renaming the ME department to MME department is summarized below.

- ME program and MTE program both have large enrollments at the MS and PhD levels.
- ME program and MTE program both have very strong research funding and expenditures records.
- The external visibility of MTE program at WPI is limited. This is despite its significant research activity level.
- Changing the name of the Department of Mechanical Engineering to the Department of Mechanical and Materials Engineering will bring significant external visibility to our MTE program without any negative impact on the ME program.
- There is a significant existing collaboration among the faculty of ME department programs (education and research). The ME department will have a better reflection of its coherent focus (internal and external) under the new name.
- The ME program and MTE program at WPI are ranked in the top 39% and 61% out of 179 and 111 ranked graduate programs in the country, respectively, according to the US News & World Report in 2020. The name change will bring a significant visibility and recognition to our MTE program, improving its ranking. This will help in attracting/recruiting highly qualified domestic and international graduate students.

Important Note

The faculty of MTE and MFE programs have unanimously agreed to rename and reclassify their MTE and MFE courses as ME courses once this motion is approved.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Academic Policy (Prof. Dudle, Chair)
Re: Motion to adjust overload policy for C and D 2021 terms

Motion: The Committee on Academic Policy recommends, and I move, to change the policy regarding the overload policy.

CAP recommends that students be allowed to overload in C or D term by 1/3 (that is, register for more than three undergraduate classes) without receiving prior advisor approval. The registrar will email all faculty advisors the list of their students who have chosen to overload. The only students that would require advisor approval would be:

- First-year students
- Students enrolled in a full-term project work (either IQP or MQP)
- Students enrolled in ID 2050
- Students overloading by more than 1/3 in the Spring semester (C and D terms inclusive), which would be a financial overload in addition to academic.

Rationale

Registration for courses which will result in an overload may take place, on a space-available basis, as of the first day of the term in which that course is offered. This proposal aims to streamline the registration process during the first week of C and D terms.

Note that students enrolled in ID 2050 are still highly discouraged from overloading during this term.

The reason for amending the policy is the ongoing impact of the COVID-19 pandemic. The traditional practice of “seeking a signature for an overload” is complicated because not all academic advisors are going to be physically on campus when C term starts. More challenging, however, is that the students often would “try out a course” by attending a few lectures when deciding their courses. For online and even hybrid courses, all course material is in Canvas, and thus can only be accessed by students in the course; and with de-densified classrooms, there is literally no opportunity for an unregistered student to attend a class.

Due to the unprecedented situation in D-term 2020, CAP proposed a one-time change to the overload policy.

Overloading: Beginning March 23, undergraduate students may overload up to 21.75 credits (C and D credits included in total) on Bannerweb. Students are *strongly encouraged* to consult with their advisor BEFORE registering for an overload. Anything over 21.75 credits will require permission from their advisor (see above for steps). Students enrolled in ID 2050 or a full-unit project (that is, 9 credits of IQP or MQP) in D-term are not eligible to overload. Advisors will get a list of any advisees overloading by March 27.

The limit of 21.75 credits is equivalent to seven undergraduate courses plus a 1/12th PE credit. There were 629 students who overloaded in D-term 2020 which was actually lower than the 639 students who overloaded in D-term 2019. It seems that students “did the right thing” in D term, and this trend should continue.

This policy will not apply to first-year students or to students who are completing a full-term project (such as an IQP or MQP).

Implementation Plan

The registrar will include the following information in emails to undergraduate students.

Overloading: Beginning January 21, students with sophomore or higher standing may overload up to 21.75 credits (C and D credits included in total) on Bannerweb. Students are *strongly encouraged* to consult with their advisor BEFORE registering for an overload. Anything over 21.75 credits will require permission from their advisor (see above for steps). Students enrolled in ID 2050 or a full-unit project (that is, 9 credits of IQP or MQP) in C or D-term wishing to overload in the same term must receive permission from their advisor to overload. Advisors will get a list of any advisees overloading by February 10th.

The registrar will send a report of the total number of overloaded students to CAP by Monday September 9th.

Date: March 11, 2021

To: WPI Faculty

From: Committee on Academic Policy (Prof. Dudle, Chair)

Re: Motion to adopt a test-blind undergraduate admissions policy for an eight-year pilot period

Motion: The Committee on Academic Policy recommends and I move that:

- 1) The current test-optional admissions policy be replaced with a test-blind admissions policy that suspends the use of standardized test scores for undergraduate admissions review during an eight-year pilot period (Fall 2021 – Spring 2029).
- 2) In consultation with CAP, the Office of Undergraduate Admissions and Office of Institutional Research will collect data from the admissions process and metrics on student success.
- 3) The Office of Undergraduate Admissions will provide interim reports to CAP in A term of the third and fifth years of the pilot (2023 and 2025), with a final report in A term of the eighth year of the pilot (2028). CAP will monitor and evaluate the success of the pilot and make a recommendation regarding admissions policies by B term 2028, with the expectation of bringing a motion to the faculty within the 2028-2029 academic year.

Background

In 2007, the WPI faculty voted to adopt a test-optional undergraduate admissions policy and position the university as the first nationally ranked national STEM university to eliminate its test score requirement. Hundreds of universities have since adopted test-optional admissions, bringing the total number to well over 1,000 four-year institutions. Since 2014, only Hampshire College had been test-blind prior to the COVID-19 pandemic. In spring 2020, the pandemic caused widespread disruption for the SAT and ACT test dates and left a large portion of the Class of 2025 without access to a test. The lack of testing served as a catalyst for the elimination of test score requirements. Fewer than one-third of universities are requiring test scores for the Class of 2025. The lack of testing also sparked a broader discussion around the usefulness of standardized test scores in admissions as well as the inequities that these scores perpetuate. As a result, 69 universities — including California Institute of Technology, Cornell University, and the University of California System — have adopted pilot or permanent test-blind admissions policies.

Rationale

WPI is recognized nationally by peer institutions and the high schools and students we serve as a leader in test-optional admissions. There is broad popular support from students, parents, school counselors, and community-based organizations to reduce and/or eliminate the influence that a single high-stakes standardized test score has on the college admissions process.

Several studies, including the testing agencies' own reports, have illustrated that test scores have problematic correlations with family income, race/ethnicity, gender, and parental education. The inequities created and perpetuated by these tests will never be completely eliminated from WPI's admissions process unless we remove the option students have to submit scores for consideration.

WPI's approach is as close to test-blind as a test-optional university could be. Over the past 13 years, WPI has leveraged its test score policy as a tool to increase access to students historically underrepresented in STEM while maintaining academic quality and creating complementary changes in admissions operations to continue addressing bias and inequities in our selection process. Universities' operationalization of test-optional policies can vary greatly. WPI's admissions process allows only for the use of test scores as contextual and optional information. Test scores are not considered an "academic" credential nor are they included in the admissions review scoring of an applicant. Adopting an eight-year pilot for test-blind admission aligns with WPI's efforts to address inequities in the admissions process and provides a data-driven way to understand whether a policy change would have positive, negative, or no impact on the quality and diversity of our student body.

In addition to a test-optional admissions policy, the Undergraduate Enrollment team has taken several steps to broaden access to students historically underserved by STEM institutions:

- WPI ceased participation in the National Merit Scholarship Program due to the Program's overreliance on a single high-stakes test score (2016)
- WPI increased financial aid available to students historically underserved by STEM institutions (2017)
- WPI completely removed test scores from merit-based and need-based financial aid calculation (2019)
- The Undergraduate Admissions team adopted regular cognitive bias trainings aimed at more equitable decision-making (2017)
- The Undergraduate Admissions team established a race and equity working group to identify and build action plans for short-term and long-term opportunities to address inequities in the university's recruitment and selection process (2020)

Adopting a test-blind admissions pilot would build upon years of test-optional success and concerted efforts to broaden access to a WPI education. Removing high-stakes standardized test scores and their problematic ties to family income, race/ethnicity, gender, and parental education, aligns with the "affordability and access" theme in WPI's emerging strategic plan as well as the university's Sustainable Inclusive Excellence Action Planning.

High school GPAs of applicants and enrolling students — both those who submit test scores and those who don't — have increased since WPI's adoption of a test-optional admissions policy. At the same time, applications for groups historically underrepresented in STEM fields — women and students of color — have grown and provided a critical foundation for the increased diversity of WPI's student body. Most important, students are succeeding at WPI regardless of whether they submitted a test score in the admissions process. The most recent retention data available (Class of 2023) shows both submitters and non-submitters have retention rates of 95%. The most recent six-year graduation data shows non-submitters outpacing submitters 94% to 89%. The ten-year averages of these two groups for retention and graduation rate are within two percentage points. Considering a test-blind admissions policy is a logical next step in the evolution of our university's selection process as we continue to broaden access to a distinctive WPI education and address inequities in college admissions.

The goals of the test-blind admission policy pilot are to:

1. Increase the diversity of the applicant pool;

2. Maintain the academic quality of incoming students; and
3. Maintain the retention rate and graduation rate of incoming students.

CAP will consult with the Office of Admissions and the Office of Institutional Research to develop a plan for data collection and assessment that is consistent with evaluating the three stated goals. For example, the diversity of the applicant pool may be assessed by analyzing data on race/ethnicity, gender, and other demographic information. Academic quality may be assessed via metrics such as GPA and academic standing. Lastly, retention and graduation rates (four year and six year) will be followed throughout the pilot period. Standardized test scores (SAT, ACT) will not be collected from applicants. The data for applicants and enrolled students during the test-blind pilot period will be compared with data from applicants and enrolled students who applied to WPI during the test-optional admissions period.

The timeline for the pilot is as follows:

Year of Pilot	Academic Year	Entering Class	Milestones
1	2021 – 2022	2025 (admitted under test-optional policy)	First year of test-blind admissions policy
2	2022 – 2023	2026	First entering class under test-blind policy
3	2023 – 2024	2027	A term 2023: Interim report to CAP
4	2024 – 2025	2028	
5	2025 – 2026	2029	A term 2025: Interim report to CAP (includes 4 year graduation data)
6	2026 – 2027	2030	
7	2027 – 2028	2031	
8	2028 – 2029	2032	A term 2028: Final report to CAP (includes two cohorts of 6 year graduation data). CAP recommendation and motion to faculty on policy moving forward.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Academic Policy (Prof. Dudle, Chair)
Re: Motion to Revise Distribution Requirements of IMGD Technology (BS) Major approved by IMGD Steering Committee on 01/24/2019

Motion: The Committee on Academic Policy recommends and I move, that revisions to the distribution requirements of the IMGD Technology (BS) major in AY2021-22, as described below, be approved.

Proposed Catalog Revision

The original relevant catalog text is shown below:

Natural & Engineering Sciences 2/3

Choose 2/3 units from any course with an AE, BB, BME, CE, CH, CHE, ECE, ES, GE, ME, PH or RBE prefix.

Mathematics and Data Analysis 2/3

Choose 2/3 units from:

- Data Analysis for Game Development (IMGD 2905).
- Any course with an MA prefix.

Computer Science 11/3

Any 3/3 units from:

- Object-Oriented Analysis & Design (CS 4233)
- Webware: Computational Technology for Network Information Systems (CS 4241)
- Introduction to Artificial Intelligence (CS 4341)
- Data Mining & Knowledge Discovery in Databases (CS 4445)
- Mobile & Ubiquitous Computing (CS 4518)
- Computer Graphics (CS 4731)
- Computer Animation (CS 4732)

The new catalog text with the proposed revised distribution requirements is shown below. Additions/deletions are indicated in **bold red**. All other distribution requirements not listed remain as stated in the 2020-2021 catalog.

Natural & Engineering Sciences 2/3

Choose 2/3 units from any course with an AE, **AREN**, BB, **BCB**, BME, CE, CH, CHE, ECE, ES, GE, ME, **NEU**, PH or RBE prefix.

Mathematics and Data Analysis 2/3

Choose 2/3 units from:

- Data Analysis for Game Development (IMGD 2905).
- Any course with **an a DS or** MA prefix.

Computer Science

11/3

Any 3/3 units from:

- Object-Oriented Analysis & Design (CS 4233)
- Webware: Computational Technology for Network Information Systems (CS 4241)
- Introduction to Artificial Intelligence (CS 4341)
- **Machine Learning (CS 4342)**
- Data Mining & Knowledge Discovery in Databases (CS 4445)
- Mobile & Ubiquitous Computing (CS 4518)
- Computer Graphics (CS 4731)
- Computer Animation (CS 4732)

Rationale

The current distribution requirements of the IMGD Technology (BS) major specify 2/3 units of Natural/Engineering Sciences which may be satisfied by any courses with an AE, BB, BME, CE, CH, CHE, ECE, ES, GE, ME, PH or RBE prefix.

The distribution requirements of the major also specify 2/3 unit in Mathematics and Data Analysis, which may be satisfied by IMGD 2905: Data Analysis for Game Development, or any course with an MA prefix.

Recently, several new programs related to the Natural/Engineering Sciences -- Architectural Engineering (AREN), Bioinformatics and Computational Biology (BCB), Data Science (DS) and Neuroscience (NEU) -- have been approved.

The IMGD faculty deems it appropriate and desirable to broaden the range of student options, and facilitate potential minors in IMGD-related topics, by (1) adding AREN, BCB and NEU to the list of course prefixes satisfying the Natural/Engineering Sciences requirement, and (2) adding DS to the course prefixes satisfying the Mathematics and Data Analysis requirement of the IMGD Technology (BS) major.

The 11/3 Computer Science requirement of the IMGD Technology (BS) major includes 3/3 units drawn from a specific list of IMGD-related 4000-level CS courses.

A new permanent CS course, Machine Learning (CS 4342), covers a topic highly relevant to IMGD Technology. The IMGD faculty deems this offering an appropriate candidate for inclusion in the list of IMGD-related 4000-level CS courses.

Resource Impact

This proposed revision to the distribution requirements of the IMGD (BA) major requires no change in current AREN, BCB, CS, DS, IMGD, MA or NEU faculty count, or physical/administrative resources.

Implementation Date

The proposed implementation date for this action is AY2021-22.

Date: March 11, 2021
To: WPI Faculty
From: Committee on Academic Policy (Prof. Dudle, Chair)
Re: Motion to Revise Distribution Requirements of IMGD (BA) Major approved by IMGD Steering Committee on 01/24/2019

Motion: The Committee on Academic Policy recommends and I move that the revisions to the distribution requirements of the IMGD (BA) major in AY2021-22, as described below, be approved.

Proposed Catalog Revision

The original relevant catalog text is shown below:

Natural & Engineering Sciences: 2/3

Choose 1/3 unit from any course with an AE, BB, BME, CE, CH, CHE, ECE, ES, GE, ME, PH or RBE prefix. *{note this is the current text in the catalog, which has a typographical error as it should say “choose 2/3 units from any courses.....”}*

General Sciences: 1/3

Choose 1/3 unit from any course with an AE, BB, BME, CE, CH, CHE, CS (except CS 2022 or CS 3043), ECE, ES, GE, MA, ME, PH or RBE prefix.

Mathematics and Data Analysis: 1/3

Choose 1/3 unit from:

- Data Analysis for Game Development (IMGD 2905).
- Any course with an MA prefix.

IMGD Electives: 4/3

Choose 4/3 units from any courses with an AR, CS (except CS 2022 or CS 3043), EN, IMGD, MU or WR prefix, at least 2/3 of which must be 3000+ level.

The new catalog text with the proposed revised distribution requirements is shown below. Additions/deletions are indicated in **bold red**. All other distribution requirements not listed remain as stated in the 2020-2021 catalog.

Natural & Engineering Sciences: 2/3

Choose 2/3 units from any course with an AE, **AREN**, BB, **BCB**, BME, CE, CH, CHE, ECE, ES, GE, ME, **NEU**, PH or RBE prefix.

General Sciences: 1/3

Choose 1/3 unit from any course with an AE, **AREN**, BB, **BCB**, BME, CE, CH, CHE, CS (except CS 2022 or CS 3043), **DS**, ECE, ES, GE, MA, ME, PH or RBE prefix.

Mathematics and Data Analysis: 1/3

Choose 1/3 unit from:

- Data Analysis for Game Development (IMGD 2905).

- Any course with **an a DS or** MA prefix.

IMGD Electives: 4/3

Choose 4/3 units from any courses with an AR, CS (except CS 2022 or CS 3043), **DS**, EN, IMGD, **MA**, MU or WR prefix, at least 2/3 of which must be 3000+ level.

Rationale

The current distribution requirements of the IMGD (BA) major specify 2/3 units of Natural/Engineering Sciences and 1/3 unit of General Sciences, both of which may be satisfied by any courses with an AE, BB, BME, CE, CH, CHE, ECE, ES, GE, ME, PH or RBE prefix.

The General Sciences category adds CS and MA (except CS 2022 or 3043) to the above list of approved prefixes.

The requirements also specify 1/3 unit in Mathematics and Data Analysis, which may be satisfied by IMGD 2905: Data Analysis for Game Development, or any course with an MA prefix; and 4/3 units in IMGD Electives, which may be satisfied by any courses with an AR, CS (except CS 2022 or CS 3043), EN, IMGD, MU or WR prefix, at least 2/3 of which must be 3000+ level.

Recently, several new programs related to the Natural/Engineering Sciences -- Architectural Engineering (AREN), Bioinformatics and Computational Biology (BCB), Data Science (DS) and Neuroscience (NEU) -- have been approved.

The IMGD faculty deems it appropriate and desirable to broaden the range of student options, and facilitate potential minors in IMGD-related topics, by (1) adding AREN, BCB and NEU to the list of course prefixes satisfying the Natural/Engineering Sciences requirement, (2) adding AREN, BCB, DS and NEU to the list of course prefixes satisfying the General Sciences requirement, (3) adding DS to the list of course prefixes satisfying the Mathematics and Data Analysis requirement, and (4) adding DS and MA to the list of course prefixes satisfying the IMGD Electives requirement of the IMGD (BA) major.

Resource Impact

This proposed revision to the distribution requirements of the IMGD (BA) major requires no change in current AREN, BCB, CS, DS, IMGD, MA or NEU faculty count, or physical/administrative resources.

Implementation Date

The proposed implementation date for this action is AY2021-22.