

WORCESTER POLYTECHNIC INSTITUTE

August 31, 2023

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

The first Faculty meeting of the 2023-2024 academic year will be held on **Thursday, August 31, 2023 at 3:15pm in OH 107 and by Zoom at: <https://wpi.zoom.us/j/98292569985>** . Refreshments will be available in OH 107 at 3:00pm.

- | | |
|------------------------------------------------------------------------------|---------------------------|
| 1. Call to Order | M. Richman |
| • Approval of the Agenda | |
| • Consideration of the Consent Agenda including the minutes from May 9, 2023 | |
| 2. Welcome | M. Richman |
| 3. President's Report | G. Wang |
| 4. Committee Business: | |
| Committee on Academic Operations (CAO) | S. Van Dessel |
| • August 2023 Undergraduate Student Graduation List | |
| Committee on Graduate Studies and Research (CGSR) | S. Olson |
| • August 2023 Graduate Student Graduation List | |
| 5. Introduction of New Faculty Members (<i>brief and understandable!</i>) | W. Soboyejo |
| • New Administrative Appointees/New Faculty Members (in their own words) | Dept. Heads
M. Richman |
| 6. Provost's Report | W. Soboyejo |
| 7. Closing Announcements | |
| 8. Adjournment | |

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WORCESTER POLYTECHNIC INSTITUTE
Faculty Meeting Minutes
May 9, 2023

Summary:

1. Call to Order; Approval of the Agenda and the Consent Agenda
2. Opening Announcements
3. President's Report
4. Committee Business: CAO, COG; CGSR
5. New Business
6. Provost's Report
7. Closing Announcements
8. Adjournment

Detail:

1. Call to Order; Approval of the Agenda and the Consent Agenda

The ninth Faculty Meeting of the 2022-2023 academic year was called to order at 11am in Olin Hall 107 by **Prof. Richman** (AE). Prof. Richman reminded all those in attendance that the meeting was being recorded for the purpose of accurate minutes only. The meeting agenda was approved as distributed. The minutes from the April 18, 2023 meeting and the 12 CAO and 5 CGSR motions in the consent agenda were approved as distributed.

2. Opening Announcements

Prof. Richman provided a summary of some of the silent work that has been done by the Faculty Governance committees this past year. The faculty approved 100 consent agenda items from CAO and 20 from CGSR. The silent work of CTAF and COAP is reflected in large part by the announcement this spring that 13 faculty members were granted tenure and seven others were promoted this year.

With our committee elections just concluded, Prof. Richman pointed out that the strength of our governance system has much to do with the breath of participation across the campus. There are 84 faculty members and staff members as well as nine students who serve across our 12 elected committees. There are also five appointed committees with 38 faculty and staff members serving on them. This effort involves roughly a quarter of our full-time faculty. Prof. Richman also added that there were nearly 80 faculty members who volunteered to have their names placed on the ballot in the most recent elections and that 29 new committee members were elected.

Prof. Richman also encouraged everyone to attend the upcoming graduate student and undergraduate student commencements.

3. President's Report

President Wang thanked the faculty for its teaching, research, and service efforts this year, all of which enhance our university community. In addition to the commencements, she encouraged everyone to attend the upcoming ROTC commissioning ceremony. President Wang congratulated all of those who were honored at this year's April Faculty Convocation

President Wang thanked all those who have worked on the revision and reorganization of the Faculty Handbook. She singled out for thanks the following contributors: Prof. Richman; Prof. Albano; Prof. Heineman; Prof. Gericke; Prof. Heinricher; Provost Soboyejo; and Univ. Counsels Bunis and Thaler. The Faculty Handbook is critical to the governance of the University, and the current version has been in need of a major reorganization. If the new Handbook is approved by the faculty today, then the Board will take it up for their consideration and their approval later this week.

President Wang added that at the upcoming Board meeting, she will share the University's five strategic priorities over the next three years with the Trustees for their input. These priorities have been disseminated on campus as evolving drafts during the last two months, and they will be incorporated into the operating and capital budget for

the upcoming fiscal year. High inflation, a possible recession, downturns in several economic tech sectors, and the threat of an 2025 enrollment cliff will make it necessary to garner additional resources and align our strategic priorities with tangible actions. **President Wang** concluded by wishing everyone a great summer.

4. Committee Business

Committee on Academic Operations (CAO)

Prof. Srinivasan (BBT) reported that the undergraduate student candidates listed in the meeting materials have either completed all the requirements for the degree designated in the department or program indicated or are expected to complete their degree requirements before May 13, 2023. They therefore are or will be eligible to receive that degree, and on behalf of CAO he moved that - pending final verification by the Registrar - they be approved for May 13, 2023 graduation. **Prof. Richman** added that one name had been removed and one name had been added to the list that had been distributed last week. **The motion passed.**

Committee on Graduate Studies and Research (CGSR)

Prof. Medich (PH) reported that the graduate student candidates listed in the meeting materials have either completed all the requirements for the degree designated in the department or program indicated or are expected to complete their degree requirements before May 11, 2023. They therefore are or will be eligible to receive that degree, and on behalf of CGSR he moved that - pending final verification by the Registrar - they be approved for May 11, 2023 graduation. **Prof. Richman** added that one name had been removed and five names had been added to the list that had been distributed last week. Pending the resolution by the Registrar of a case raised by **Prof. Troy** (BME) of one BME student not on the list, **the motion passed.**

Prof. Richman thanked Registrar Miles and all those in the Registrar's Office for their hard work in preparing the graduation lists.

Committee on Governance (COG)

Prof. Albano (CEAE, Chair, COG) and **Prof. Heineman** (CS, Sec., COG), on behalf of the Committee on Governance, moved that the reorganized Faculty Handbook, as distributed to the WPI Faculty, be adopted in place of the current Faculty Handbook (updated as of July 1, 2022). (See **Addendum #1** on file with these minutes.)

Prof. Albano described the general sensibility of the Faculty Handbook project. In its revised form, it addresses a longstanding institutional need of mutual significance to the Faculty, the Administration, and the Board of Trustees. The reorganized Faculty Handbook is a new starting point for discussions that may be complex based on substantive matters but will not be complicated by unnecessary confusions created by a disorganized foundation.

Prof. Albano pointed out that while the WPI Faculty Handbook has always been updated regularly to include the most recent changes approved by the Faculty, additions to the Handbook have typically been made logically but in a piecemeal fashion that could not be synthesized at every step. The focus of this project has been on reorganization rather than wholesale revision: shifting whole sections; combining sections; reorganizing within sections; and extracting elements from different sections and combining them into new ones. These actions involved editorial changes, corrections of inconsistencies, helpful clarifications, incorporating simple process improvements, and documentation of accepted current practices to formalize common understandings. The new structure is as follows: Governance (Chapter One); Academic Appointments (Chapter Two); Tenure (Chapter Three); Promotions (Chapter Four); Faculty Grievance Procedure (Chapter Five); and the remaining (unchanged) chapters (six through ten) on academic policies, awards, benefits, WPI policies, and conduct policies. As an example, Prof. Albano showed the detailed contents of the Tenure chapter (Three) and how they mapped from a wide variety of disparate locations in the current Faculty Handbook.

Prof. Heineman reviewed the timeline of the reorganization process beginning in the summer of 2022 when the structure of the new handbook was conceived and drafts of the five new chapters were prepared by Prof. Richman. In the fall of 2022, COG conducted its own section-by-section review, and feedback was solicited from University Counsel and Provost Soboyejo. From January to February 2023, drafts of relevant chapters were distributed to the Chairs of CTAF, COAP, and CTRF for their committees' input, an overview was presented at the Feb. 2 faculty meeting, and the first complete draft was distributed to the faculty soon after. Beginning in March 2023, a working

group has read through the entire draft line-by-line for detailed study, three additional presentations have been given at the March 6 and March 30 faculty meetings, continuous feedback was sought by COG from the entire faculty community, a draft motion to approve the faculty handbook was presented at the April 25 faculty meeting, and the final draft is under consideration today. If approved, it will be presented to the Board's Academic Planning Committee and the full Board on May 11-12.

Prof. Heineman emphasized that the simple choice now for the faculty is either to maintain the current Faculty Handbook with all its deficiencies or move forward to the new one although it is still not perfect. The reorganized handbook unscrambles the current version, establishes a synthesized baseline for our current policies, eliminates much of the confusion about those policies, and clarifies the technical issues and gaps that we will need to address in the future. Approval by the faculty, the administration and the Board will be a generational institutional accomplishment that will provide a foundation for the foreseeable future.

Dean McNeill (ECE) pointed out that the reorganized Faculty Handbook places the formation of a Department of Peer Review Committee (for review of teaching by tenured faculty) at the discretion of each department while in the current faculty handbook such review committees are required. **Prof. Heineman** explained that the spirit of the handbook reorganization effort has been to incorporate changes that conform with our accepted current practices. In this particular case, the change was made consistent with our longstanding accepted practice, which has been to defer departments' discretion on the formation of these review committees.

Prof. Richman explained that the motion required a two-thirds majority. **The motion passed** (by a vote of 131 in favor, to 1 against).

Committee on Graduate Studies and Research (CGSR)

Prof. Medich (PH, Chair, CGSR) made the following motion: On behalf of the Civil, Environmental, and Architectural Engineering Department and the Architectural Engineering Program, the Committee on Graduate Studies and Research recommends and I move that a new Master of Architecture (M. Arch.) graduate program, as described in the meeting materials distributed, be added. (See **Addendum #2** on file with these minutes.)

Prof. Eggleston (CEAE, Head) explained that in order to properly address climate change, we will need to address the construction of new and the renovation of existing buildings, and we will need to fundamentally change the way we design, build, and operate our buildings in the future. We can't just change the electricity source - we need to also change our designs at the structural level. This is a large part of the motivation for proposing this new master's program.

Prof. Van Dessel (CEAE) explained that the M. Arch degree proposal has been in the making for several years, and the times call for a new program that integrates our current four-year ABET accredited B.S. programs in either civil engineering or architectural engineering with one additional year of graduate-level architectural engineering. If approved, WPI will be the first institution in the country to integrate engineering and architecture into one five-year master's program.

Prof. Van Dessel described the degree requirements of the M. Arch degree program, which in one track include a B.S. in Architectural Engineering and one year of graduate work for a Master of Architecture degree, and in another track include a B.S. in another major at WPI and additional graduate work for a Master of Architecture that will vary depending on the candidate's previous education and experience. Each track includes a nine-credit focus area in either structures or climate adaptation. Neither program allows double counting for undergraduate and graduate credits.

Prof. Van Dessel explained that 88 percent of surveyed WPI undergraduates in architectural engineering were either somewhat interested (28 percent) or very interested (60 percent) in pursuing the M. Arch. Degree. A market study concluded that WPI would have a distinct edge in terms of curriculum, marketability, and reputation in STEM. In addition, the program is aligned with the current movement in the U.S. to integrate engineering and architecture. The intention is to recruit applicants in 2023-24 and graduate the first cohort in 2025-26.

Prof. Demetry (MME) asked if the number of credits required for the B.S. degree would increase in this program.

Prof. Van Dessel clarified that the undergraduate degree requirements will be unchanged.

Prof. Smith (IMGD) asked if the expected background courses in the program would be taken at the undergraduate or graduate level. **Prof. Van Dessel** explained that these courses are required and they could be taken as undergraduate electives, and this expectation would be brought to our undergraduate students' attention well in advance.

Prof. Wobbe (DIGS) asked how common it was for our graduate students to complete 30 credit hours in a single academic year. **Prof. Van Dessel** explained that students need not expected complete 30 credits in a single year, but there are opportunities for undergraduate students to take grad courses before completing their B.S. degrees and during the summers.

Dean Sheller (DIGS) added that the Department of Integrative and Global Studies (DIGS) would be contributing to the courses in the climate adaptation focus area. The program will help fill DIGS courses in climate adaptation and will create a larger community of master's students who will work together in that area. Dean Sheller has also seen the market research indicating significant career opportunities for students in the field.

Prof. Rosewitz (CEAE) expressed her support for the Master of Architectural program. She has seen many graduate applicants with architecture backgrounds who are settling for degrees in Construction Project Management (CPM) but have expressed a more direct interest in this program. As an instructor of CE 501 Professional Practice and CE 3020 Project Management, she looks forward to higher enrollment in both courses.

Prof. Strauss (DIGS) reemphasized the synergies that will be created between activities in the Global School and the interest generated by the M. Arch. Program.

Prof. Servatius (MA) made a friendly amendment to remove the admission requirement of a "minimum 3.00 GPA" and to replace it with a requirement of having received a B.S. degree from WPI "in good standing." The friendly amendment was accepted by **Prof. Medich**.

The (amended) motion passed.

Committee on Graduate Studies and Research (CGSR)

Prof. Medich (PH, Chair, CGSR) made the following motion: On behalf of the WPI Business School, the Committee on Graduate Studies and Research recommends and I move that an M.S. program in Financial Technology (Fin. Tech.) and four new courses (MIS 510, MIS 520, FIN 530 and FIN 540) be added, all as described in the materials distributed for this meeting. (See **Addendum #3** on file with these minutes.)

Prof. Shah (BUS) explained that there is demand in industry for this interdisciplinary program, which resides at the intersection of finance, information technology, computer science, mathematics, and data science. The program objectives are as follows: to gain knowledge of key technologies of the FinTech industry, including artificial intelligence (AI), machine learning (ML), blockchain & smart contracts, and cryptocurrency; to develop key competencies in predictive analytics and programming applications for quantitative risk management, financial forecasting, corporate innovation, and financial modeling; to understand information and communication tools, technologies, and standards integral to consumer, merchant, and enterprise services in the payments and financial service sectors; to design solutions using these technologies for the emerging FinTech industry, for communities historically excluded from the banking and/or securities sectors, and for non-financial industries; to learn about the emerging areas for entrepreneurial opportunities in the FinTech sector.; and to identify and evaluate the limitations and challenges of FinTech, including equity, inclusion, ethical uses of technology, and the basic legal and regulatory frameworks of the U.S. banking and securities sectors

Prof. Shah presented the proposed 33-credit curriculum with 9 credits of core courses, 18 credits in two specialties (chosen from advanced financial mathematics, FinTech analytics, and FinTech development), and 6 credits of capstone courses.

Prof. Weathers (BBT) was concerned, with problems and energy demands of cryptocurrency in mind, about the apparent absence of coverage of ethics anywhere in the program. **Prof. Dunbar** (BUS) explained these issues of ethical concerns are embedded in a full understanding of cryptocurrency. **Prof. Strauss** (DIGS) suggested that several of our current courses devoted to ethics and/or with ethics content could be incorporated into the program.

Prof. Somasse (SSPS) was in favor of the proposal and asked about job prospects for prospective FinTech graduates. **Prof. Dunbar** pointed out that current businesses (such as Fidelity and Citizens) are hiring graduates with this technical background in finance (including AI and machine learning) to complement existing skillsets in traditional finance and to fill existing gaps.

Prof. Pinciroli (RBE) asked about the difference between the two core courses MIS 520 (AI and its Business Applications) and MIS 587 (Business Applications in ML). He was confused about the difference between AI and ML and why one would appear in one course and the other in another course. **Prof. Dunbar** explained that we wanted to develop tools around AI and ML and provide more breadth using data from businesses and for finance. Prof. Pinciroli also asked for clarification about the content of MKT 568 (Data Mining Business Applications). **Prof. Shah** explained that MKT 568 was revised in today's consent agenda to focus on marketing analytics rather than on data mining. **Prof. Strong** (BUS) clarified that the machine learning course (MIS 587) is a technical course that already exists. For the FinTech program, MIS 520 is intended as a broader course around AI, and it will include a significant focus on ethics.

Prof. Smith (IMGD) pointed out that none of the descriptions of the new courses MIS 510, MIS 520, FIN 530, and FIN 540 include any mention of ethics. **Prof. Strong** (BUS) explained that because of the awareness that the faculty have of these issues of ethics – particularly in using AI to make business decisions - the courses will cover them adequately, including through the use of guest speakers from other courses as needed.

Prof. Strauss (DIGS) asked if there were space in the program curriculum to add more electives that incorporate ethics more explicitly. **Prof. Strong** (BUS) described the highly interdisciplinary nature of the program, and preferred to incorporate ethics into required courses rather than treat it as a separate area of coursework.

Dean Jackson (BUS) appreciated the comments about ethics and pointed out that successful accreditation requires that ethics be part of the program. The lack of ethics in the course descriptions was an oversight. She considers it our responsibility to ensure that FinTech, AI, blockchain and other such technologies are used for positive societal impact and that we produce ethical leaders.

Prof. LePage (CEAE) asked if the FinTech program would be offered online as well as in-person. **Prof. Strong** (BUS) is confident that at some point, like most of the other graduate programs in the Business School, this program would be available online, as well. But the launch in fall 2023 would be as an in-person program for now.

Prof. Ahrens (CS) asked, in light of the interdisciplinary nature of the program, if undergraduate advising guides are available that indicate the kind of background students will need in order to be admitted to the program. **Prof. Strong** thought that undergraduate advising plans could be worked out, but she clarified that the proposed program does not allow undergraduate credits to be counted toward the graduate degree, as they might be in a B.S./M.S. program.

Prof. Boudreau (HUA) asked if it were possible to adopt this proposal as a temporary one-year program that would be made permanent by the faculty after the modifications to the ethics content of the courses were formalized.

Prof. Strong (BUS) was reluctant to begin recruiting students into a two-year graduate program that had only been approved for one-year.

Prof. Demetry (MME) proposed as an alternative to Prof. Boudreau's suggestion that the motion be amended as follows (with *underlined italicized text* added):

On behalf of the WPI Business School, the Committee on Graduate Studies and Research recommends and I move that an M.S. program in Financial Technology (Fin. Tech.) and four new courses (MIS 510, MIS 520, FIN 530 and FIN 540) be added, all as described in the materials distributed for this meeting, with the understanding that ethics will be integrated into revised course descriptions.

Prof. Medich (PH) accepted the friendly amendment.

The (amended) motion passed.

5. New Business

There was no new business.

6. Provost's Report

Provost Soboyejo noted his great pleasure in today's meeting. In his view, the reorganized Faculty Handbook is an emblem of what WPI can accomplish when we work together. He reflected that since its origin in 1968, many "greats" such as Bill Grogan and Jim Demetry have taken responsibility for its evolution and for our tradition of faculty governance. Using a Biblical analogy [you had to be there] he recalled meeting with Secretary Richman one year ago to discuss the need to update the Faculty Handbook –and "led [Secretary Richman] into temptation" by proposing that Prof. Richman undertake this project, which they both valued and President Leshin also supported. He reflected on Secretary Richman's summer work alone on the Handbook that established the new structure of the handbook and produced polished first drafts of each new section. Provost Soboyejo recounted Secretary Richman's periodic check-ins with the Provost and University Counsel, and called the work a "monumental effort." Since the end of the summer, the project has embodied leadership of the faculty through its faculty governance, as well as shared governance with involvement from faculty governance and all its committees, WPI administration (including Prof. Heinricher, Dean. Gericke, Dean Rissmiller, and University Counsel), and the WPI Board of Trustees (including the Chair of the APC, Marni Hall, and the Board Chair, Bill Fitzgerald). He also noted Prof. Heineman's meticulous digital tracking of the content in the drafts and the diplomatic skills of several people involved to resolve outstanding questions. The Provost observed that the project underscores the institution's great success "whenever we come together," and called the reorganized Faculty Handbook a "new beginning." He thanked Prof. Richman and everyone else who worked so hard to make the revised Faculty Handbook a reality.

Provost Soboyejo also expressed his appreciation for the manner in which the M.S. in FinTech program proposal was handled today, which demonstrated the cooperative spirit of education at WPI. The Provost thanked everyone for their help this year in supporting campus well-being and in re-stabilizing WPI as a community. He appreciated the manner in which everyone supported our students, and he wished everyone a happy and enjoyable summer break.

7. Closing Announcements

Prof. Richman thanked Prof. Hanlan for his work as our regular Parliamentarian, and he thanked Prof. Spanagel and Prof. Dominko for their work as alternate Parliamentarian throughout the year. He thanked Kate Beverage for her work to ensure that our faculty meetings run smoothly even as they become increasingly dependent on technology. Finally, Prof. Richman thanked the entire community for an especially productive year that has concluded on a high note for the University, for the faculty, and for faculty governance.

8. Adjournment

The meeting was adjourned at 12:55pm.

Respectfully submitted,

Mark Richman

Secretary of the Faculty

Addenda on file with these minutes:

Addendum #1 - COG Motion to Adopt the Reorganized Faculty Handbook - Minutes - May 9 2023

Addendum #2 - CGSR Motion to Approve Master of Architecture - Minutes - May 9 2023

Addendum #3 - CGSR Motion to Approve MS FinTech - Minutes - May 9 2023

Date: August 31, 2023

To: WPI Faculty

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

Re: Motion to approve the August 2023 undergraduate student graduation list

Motion: The Office of the Registrar reports that the following candidates have, as of August 30, 2023, completed all the requirements for the degree designated in the department or program indicated and are eligible to receive that degree. Therefore, as Chair of the Committee on Academic Operations, I move that these students be approved for August 30, 2023 graduation.

Bachelor of Arts

**Interactive Media and Game
Development:**

Warren Andress
Nathan Clune

Bachelor of Science

Aerospace Engineering:

Di Abdimash
Tiana Am
Nicholas Fiorenza
Minor: Electrical and Computer
Engineering
Dylan Gerisch
Watts Herideen-Woodruff
Jacob Moore
Joseph Salvato
Mary Catherine Shea

Biochemistry:

Gismael Lopez

Bioinformatics and Computational

Biology:

Emmaline Raven

Biology and Biotechnology:

Elizabeth Lemay

Biomedical Engineering:

Alex Hill
Alexander King
Minor: Chemistry

Chemical Engineering:

Christopher Harvill
Jaqueline Simon Villacis

Civil Engineering:

Jacob Grills
John Lowther
Lana Vilcinskas

Computer Science:

Othniel Bondah
Marc Capobianco
Caden Crist
Double Major
Uri Dvir
Minor: Mathematics
Benjamin Gilchrist
Nicholas Grumski
Double Major
Helen Le
Double Major
Benjamin Martin
Double Major
Alex Martinho
Minor: Mathematics
William McDonald
John Muirhead
Double Major
Jonathan Palmieri
John Petrarca
Kristi Prifti
Jack Sullivan
Minor: Mathematics
Seamus Sullivan

Data Science:

Aidan Burns
Mia Hopman

Electrical and Computer Engineering:

Timon Butler
Lin Guan
Shay Mitton
Double Major

Humanities and Arts:

Shay Mitton
History Concentration
Double Major
Catina Schneck

Industrial Engineering:

Shea O'Donovan
Irene Sesma Matamoros

Interactive Media and Game**Development - Technology:**

Benjamin Martin
Double Major
Alexandra McFann

Mathematical Sciences

Lyra Layne
Yiyi Wu
Double Major

Mechanical Engineering:

James Barrera
Mechanical Design Concentration
Mark Bibiu
Minor: Economics
Elizabeth Cullen
Karl Ghosn
Benjamin Nguyen
Oscar Villalonga-Vivoni
Qianchen Zeng

Physics:

Leo Kiefer
William Luksha
Minor: Mathematics

Robotics Engineering:

Megan Aloise
Minor: Electrical and Computer
Engineering
Minor: Mechanical Engineering
Minor: Computer Science
Madeline Brady
Caden Crist
Double Major
Nicholas Grumski
Double Major
Helen Le
Double Major
John Muirhead
Double Major
Tyler Sanderville
Yiyi Wu
Double Major

Date: August 31, 2023

To: WPI Faculty

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

Re: Motion to approve the August 2022 graduate student graduation list

Motion: The Office of the Registrar reports that the following candidates have, as of August 30, 2023, completed all the requirements for the degree designated in the department or program indicated and are eligible to receive that degree. Therefore, as Chair of the Committee on Graduate Studies and Research, I move that these students be approved for August 30, 2023 graduation.

Doctor of Philosophy

Biomedical Engineering:

Elzani van Zyl

Business Administration:

Amy Finn

Samuel Allen

Chemistry:

Erin Hickey

Civil Engineering:

Anass Harmal

Computer Science:

Ashish Gurung

Brian Lewandowski

Data Science:

Ahmad Ghasemi

Alexander Moore

Erin Teeple

Learning Sciences and Technology:

Xiwen Lu

Materials Science and Engineering:

Timothy Piette

Himanshu Tanvar

Mathematical Sciences:

Guillermo Nuñez Ponasso

Mechanical Engineering:

Nathaniel O'Connor

Physics:

Raid Suleiman

Robotics Engineering:

James Akl

Sean McGovern

Raagini Rameshwar

Social Science:

Souleymane Bah

Statistics:

Xiaohui Chen

Master of Business Administration

Timothy Caldwell

Lindsay Gotts

Clive Green

Manuel Henriquez

Ablatt Mahsut

Sean Metras

Joshua Moreaux

Kristina Wilson

Master of Computer Science

Andrew Casserly

Dennis Juhasz

Dylan Riley

Master of Engineering

Biomedical Engineering:

Saad El Hassouni
Andre Figueroa Milla
Dana Maloy
Valeria Urena Quiros
Juan Villamizar

Electrical and Computer Engineering:

Annette Conticchio
Alex Legere
Wenjie Lu

Power Systems Engineering:

Chanae Bruno
Aaron Drammeh
Steven Eubanks
Andrew Gayle
Kevin Griffiths
Hoang Huynh
Christophe Kasamba
Tyler Nelson-Yarrows
Juan Silva
Daniel Thompson
Kawsu Touray
Clifford Williams

Master of Mathematics for Educators

John Tedesco

Master of Science

Aerospace Engineering:

Di Abdimash
Tyler Guertin
Jordan Jonas

Bioinformatics and Computational Biology:

Monet Norales

Biology and Biotechnology:

Weikang Fu

Bioscience Management:

Nicole Abdallah
Kaffa Cote
Ahmed Hafizallah
Mark Johnson
Chante Jones
Sadie MacLean
Kathryn Pellerin
Jennifer Quaglia
Elizabeth Walters
Benjamin Wheat
Michael Woodbury

Biotechnology:

Bailey Adami-Sweet
Lila Gani
Calista Murphy

Business Analytics:

Calisto Betti

Chemical Engineering:

Januario Da Costa
David Kenney
Hunter Wieckowski
Andrew Yatsuhashi

Chemistry:

Jessica Takami

Civil Engineering:

Mobin Vandadi
Marshall Watts

Community Climate Adaptation:

Jacob Morse

Computer Science:

Samuel Bryan
Devin Coughlin
Aaron Haim
Shengye Lin
Nathanael Mercaldo
Robert Roche
Casey Snow
Jack Sullivan

Construction Project Management:

Mathew McCarthy

Data Science:

Ozge Aygul

Electrical and Computer Engineering:

Andrew Adiletta
Matthew LeClair
Aaron Maxam
Jonathan Valsamis
Maxwell Westreich

Fire Protection Engineering:

Julia Cuendet
Matthew Penkala

Interactive Media and Game Development:

Zihan Ma

Management:

Dilan Altiparmak
Michael Carpinello
Daniel Dietrich

Manufacturing Engineering:

Ryan Luisi

Materials Science and Engineering:

Christine Ma

Mechanical Engineering:

John Benoit
Neel Adwait Dharmadhikari
Ioannis Diakolambrianos
William Donovan
Shu Guo
Erik Herrera
Asha Karmen-Chan
Zachery Ladd
Cam Tu Le
Michael Viozzi
Andrew White

Physics:

Husna Amini
Ana Cano

Robotics Engineering:

Abhiroop Ajith
Khizar Mohammed Amjed Mohamed
Sayan Das
Edward Jackson
Robert Menna
Wael Mohammed
Arnold Muralt
Aniket Patil
Mithulesh Ramkumar
Anujay Sharma

Science and Technology for Innovation in Global Development:

Caroline Jaeger

Systems Engineering:

Nicholas Benoit
Alexander Berner
Natasha Berner
Nicholas Chahine
Rachel Christensen
Luis De La Maza
Nicholas Janco
Christen Jones
James Kern
McGinnis Miller
Phuong-Uyen Nguyen
Kevin Oconnor
Jonathan Rajcula
Tania Rivera Rios
Krzysztof Szemiot
Brianna Thornton
Jonathan Van Ness
Michael Ware

Systems Engineering Leadership:

Jacob Pelletier

Brief Biographies of New and Recently Appointed WPI Faculty Members Fall 2023

New Administrative Appointees

President

“Grace” Jinliu Wang, President & Professor Department of Mechanical and Materials Engineering at WPI
M.S. and B.S., Polymer Materials, Beijing University of Chemical Technology, Beijing, China 1995
Ph.D., Materials Science and Engineering, Northwestern University, Evanston, IL, U.S.A. 2001

Elected by the WPI Board of Trustees after an extensive national search, President Wang comes to WPI from The Ohio State University (OSU) where she served as executive vice president for research, innovation, and knowledge, and as a professor in Materials Science and Engineering. At OSU, Wang’s efforts helped expand the university’s research and innovation ecosystem, achieving \$1.38 billion in annual R&D expenditures during her tenure. With a strong focus on supporting faculty, staff, and student researchers, innovators, and entrepreneurs, Wang led the team to support curiosity-driven research; attract external funding to establish multiple large-scale, impact-driven, interdisciplinary research centers; launch campus-wide entrepreneurial activities; and enable experiential learning opportunities. Wang played a leading role in building a few large-scale, strategic university-industry partnerships, setting the vision, and paving the pathways for the development of OSU’s innovation district.

Prior to OSU, Wang served in a series of increasingly complex leadership roles at the State University of New York (SUNY). Appointed by the SUNY Board of Trustees, Wang started as vice chancellor for research and economic development at SUNY System. She was subsequently promoted to senior vice chancellor for research and economic development of the SUNY System. Wang simultaneously served as the interim provost for the SUNY System for one academic year. For about two and half years, Wang held dual roles as the interim president of SUNY Polytechnic Institute (SUNY Poly) and the senior vice chancellor for research and economic development of the SUNY System. She also served as a professor in Materials Design and Innovation at the flagship University at Buffalo (UB).

Wang led the SUNY research enterprise with about \$1.7 billion in annual R&D expenditures, advanced the research and economic development growth strategy, and significantly expanded research capacity in key areas. She supported a purposeful focus on identifying and implementing tools and resources to improve access and affordability at scale; enabling pathways for student success and completion; and fostering a diverse, inclusive, and welcoming campus culture. Wang was instrumental in building large-scale university-industry partnerships, including partnerships with IBM, Applied Materials, and Cree, to grow impact-driven research and innovation while fueling regional economic growth. Wang led SUNY Poly during the COVID-19 pandemic where she prioritized the health of the community with a hands-on, caring approach.

Before SUNY, Wang served as deputy assistant director for engineering and later as acting assistant director for engineering at the National Science Foundation (NSF) where she oversaw a portfolio of more than \$900 million, investing in frontier engineering research, supporting engineering education, and fostering innovation and technology commercialization. Previously at NSF, Wang was the director of Industrial Innovation and Partnerships division. She started at NSF as a program director, focusing on investing in small businesses in the areas of nanotechnology, advanced materials, and manufacturing. Wang began her career at IBM/Hitachi Global Storage Technologies where she focused on research and development of thin-film magnetic recording media and carbon overcoat for data storage. She holds seven U.S. patents.

In 2022, Wang was appointed by the White House to serve on the National Quantum Initiative Advisory Committee. She is a council member of the Government-University-Industry Research Roundtable (GUIRR) at the National Academies of Sciences, Engineering, and Medicine. She is a member of the Board of Governors for the New York Academy of Sciences. She also serves on the Board of Massachusetts High Technology Council (MHTC).

Department Head

Department of Mathematical Sciences

Sarah Olson, William Steur Professor and Department Head

B.A., Biology, Providence College, 2003

B.A., Mathematics, Providence College, 2003

M.S., Mathematics, University of Rhode Island, 2005

Ph.D., Biomathematics, North Carolina State University, 2008

Asst. Prof., Dept. of Math. Sci, WPI, 2011-2017

Assoc. Prof., Dept. of Math. Sci, WPI, 2017-2021

Interim Dept. Head, Dept. of Math. Sci., 2021-2023

Prof. Olson focuses her research on the development of novel computational methods, fluid dynamic issues in biology, and models that bring together mechanics and chemical regulatory mechanisms. She has published more than 35 scholarly articles and led or supported nearly \$2 million in funded research. In 2019, she was named a Fulbright Research Scholar. Olson has taught a range of courses and developed new courses. In addition, she has served as secretary of the Society for Industrial and Applied Mathematics (SIAM) Life Sciences, and she has served as graduate coordinator in her department and as a member of the Committee on Tenure and Academic Freedom at WPI.

Tenured and Tenure-Track Faculty Members

Tenure-Track Teaching Faculty:

Department of Aerospace Engineering

Zachary Taillefer, Assistant Professor of Teaching

B.S., Aerospace Engineering, Worcester Polytechnic Institute, 2011.

M.S., Mechanical Engineering, Worcester Polytechnic, 2012.

Ph.D., Aerospace Engineering, Worcester Polytechnic Institute, 2017

Research Scientist, Hall Thruster Group, Busek Co. Inc., Natick, MA, 2014 - 2016

Senior Scientist, Hall Thruster Group, Busek Co. Inc., Natick, MA, 2016 - 2019

Assistant Teaching Professor, Aerospace Engineering, WPI, 2019-2023.

Prof. Taillefer's teaching interests focus on new ways to deliver and teach fundamental topics in aerospace engineering to students, by combining established pedagogical techniques, such as active learning, and incorporating them into applications-based problem solving and projects. While serving as a Senior Scientist in the Hall Thruster Group at Busek Co. Inc., a company focused on advanced in-space propulsion systems for military, government, and commercial satellites, Prof. Taillefer's work included, for both research and commercial applications, electric thruster and hollow cathode development, propellant management and delivery systems, and plasma diagnostics. Prof. Taillefer leverages his industry experience with his passion for teaching to provide a wholistic and practical approach to teaching the next generation of engineers and scientists. His current research interests include developing advanced electric propulsion systems which operate on alternative (to xenon) propellants, new plasma sources and diagnostic techniques, and plasma-assisted flow control.

Department of Humanities and Arts

Gizem Arslan, Assistant Professor of Teaching

B.A., English and German, Franklin and Marshall College, 2003

M.A., German Studies, Cornell University, 2009

Ph.D., German Studies, Cornell University, 2013

Assistant Teaching Professor, Worcester Polytechnic Institute, 2021-2023

Prof. Gizem Arslan's research and teaching interests include post-war literatures in German, French and Turkish, translation studies, migration studies, theories of language, literary-mathematical experiments, and writing systems of the world. She enjoys teaching German at all levels and learning new languages. Particularly important to her teaching are exploring connections between German and other languages, languages for the professions, and intercultural learning. She is continually educating herself on diversity, equity and inclusion issues in the classroom. Her work in progress includes articles on multilingual end-of-term projects in language programs, as well as on the translatability of autobiography through the lens of French author Georges Perec's novel *W, or the Memory of Childhood* (1975). Also in progress is a book project on literary experimentation with writing systems as a form of resistance to ethno-nationalist ideas about language. Like the authors in her research projects, she enjoys playing with language and encouraging her students to do the same.

Kara Parks Fontenot, Assistant Professor of Teaching – IN PERSON

B.S., Humanities, U.S. Air Force Academy, 1996

M.A., Humanities, California State University-Dominguez Hills, 1999

M.A., English, University of Central Florida, 2006

Ph.D., English, University of Maryland-College Park, 2018

Assistant Professor, English & Humanities, Embry-Riddle Aeronautical University, 2010-2012

Lecturer, Professional Writing, College of Engineering, University of Massachusetts-Amherst, 2018-2022
Assistant Teaching Professor, Worcester Polytechnic Institute, 2022-2023

Kara Parks Fontenot's research and teaching interests include composition, rhetoric, and African American literature. She has eighteen years of experience teaching a wide variety of undergraduate courses in composition, rhetoric, literature, and the humanities more broadly, including first-year composition, writing about science and technology, African American and Ethnic American literature, folklore, world culture, and ethics. Kara's undergraduate coursework at the United States Air Force Academy gave her a general knowledge base in engineering disciplines and prepared her well for teaching at STEM-focused institutions like WPI. Kara's current research interests are in social justice rhetoric and ethnic American studies.

Emily Gioielli, Assistant Professor of Teaching

B.A., History, Mount Vernon Nazarene College, 2002

M.A., European and South Asian History, University of Cincinnati, 2004

Ph.D., Comparative History, Central European University (Budapest), 2015

Assistant Teaching Professor, Worcester Polytechnic Institute, 2021–2023

Emily Gioielli's teaching and research centers follows two threads: how societies experience violent events and how gender and sexuality have shaped history and history writing. She asks students to consider why people's experiences and memories of events differ and how they might write a different history that includes the voices and experiences of marginalized groups. She is especially focused on helping students make the transition from consumers to producers of knowledge and has been working with a team of WPI faculty in HUA to build a first-year experience for students entering WPI. She is also keen to design courses centered on the history of disability.

Kevin Lewis, Assistant Professor of Teaching

B.S., Natural Science, Worcester State College, Worcester, Massachusetts, 1992

Master of Technical and Professional Writing, Northeastern University, Boston, Massachusetts, 1998

M.F.A., Writing for the Screen and Stage, Point Park University, Pittsburgh, Pennsylvania, 2022

Instructor of Technical Communication, Virginia Tech, Blacksburg, Virginia, 2014-2016

Associate Professor of the Practice, Virginia Tech, Blacksburg, Virginia, 2016-2017

Professor of Practice, Worcester Polytechnic Institute, Worcester, Massachusetts, 2017-2022

Assistant Teaching Professor, Worcester Polytechnic Institute, Worcester, Massachusetts, 2022-2023

Kevin Lewis is a writer and teacher who focuses on professional writing and screenwriting. A former technical writing practitioner for over 20 years, Kevin's writing expertise centers around software, technology, and business, which he leverages to create course topics and assignments that will help students become stronger writers in the workplace. Kevin also ensures that the WPI student understands what it will mean to apply their technical and scientific knowledge as subject matter experts on writing projects in their future careers. In his role as Director of WPI's Professional Writing program, Kevin's primary goals are to improve student advising, the Professional Writing curriculum, and the general experience for writing students. After completing his MFA, Kevin also began focusing on screenwriting, both in his own writing and in his work at WPI. Prior to his teaching career, Kevin published the O'Reilly book *Creating Effective JavaHelp*. Since then, he has published in *Digital Humanities Quarterly* and has had multiple screenplays place in competitions, including one that was a finalist in the ScreenCraft Short Film Screenplay Competition.

Ingrid Matos-Nin, Professor of Teaching

B.A., Political Science, University of Puerto Rico, Mayagüez, 1981

B.A., Hispanic Languages and Literatures, Pontifical Catholic University of Puerto Rico, Ponce, 1986

B.S., Secondary Education, Pontifical Catholic University of Puerto Rico, Ponce, 1997

M.A., Hispanic Language, Pontifical Catholic University of Puerto Rico, Ponce, 1988

Ph.D., Hispanic Languages and Literatures, Boston University, 2004

Professor of Teaching, Worcester Polytechnic Institute, 2023-

Professor Matos-Nin's interest center on developing the best innovative teaching practices to improve the learning process of the Spanish Language and its cultures. She utilizes interactive resources and includes subjects like contemporary issues to make her students practice the language and learn grammar and is also the only Spanish professor who employs the services of a tutor to give her students an extra two hours per term to practice their language skills and to review any grammar that needs to be re-taught. Professor Matos-Nin is committed to the Insight Advising Program where she has been a Faculty Advisor for eighteen years non-stop. She oversees all the Capstone of the Spanish Division. Her publications discuss women and LGBTQ issues. She attends workshops and seminars on the subject, as well as workshops and seminars on the learning and teaching disciplines.

Rebecca Moody, Assistant Professor of Teaching

B.A., English, Oklahoma State University

M.A., Women's & Gender Studies, University of Texas, Austin

M.A., Religion, Syracuse University

Ph.D., Religion, Syracuse University

Assistant Teaching Professor, WPI, 2018-2023

Rebecca Moody's teaching interests center on inclusive pedagogy. She enjoys teaching extra-canonical authors and texts and using them to facilitate class discussion that helps unsettle our students' deep-seated ideas about religion and geography, gender and ethnicity. Since 2019, she's directed the Morocco Humanities and Arts Project Center; also in 2019, she co-founded (with Lindsay Davis [HUA]), the Gender, Sexuality and Women's Studies (or GSWS) Program in Arts and Sciences. In both capacities, she works with students as they complete their HUA sequences, minors and majors in GSWS, Philosophy and Religion, Arabic, and International and Global Studies. She was named Insight Advisor of the year last year. Finally, with the Inclusive Pedagogy working group, including Dr. Davis, Francesca Bernardi (Math), Crystal Brown (SSPS) and Raisa Turbo (Physics) and funded in part by the Morgan Center, Rebecca recently surveyed 165 WPI syllabi for their attention to inclusivity and 130 WPI undergraduates for their expectations about inclusivity; "Cultivating Inclusivity in Introductory Undergraduate STEM Course Syllabi," the article that results, is currently under review with the journal *Nature*.

Department of Integrative and Global Studies

Grant Alan Burrier, Associate Professor of Teaching

B.A. Political Science/Spanish, The University of the South: Sewanee

Ph.D. Political Science, University of New Mexico, 2014

Grant completed his doctoral program with sub-field specializations in Comparative Politics and International Relations. He is a Latin American and Caribbean expert broadly speaking, having lived and traveled throughout the region. His dissertation analyzed infrastructure investments and sustainable development in Brazil, focusing on the policymaking process in Brazil's developmental state and the socio-environmental impacts of hydroelectric dams in the Amazon. His research interests include political economy, the environment, renewable energy, social welfare, democratic institutions, and populism. He has over a decade of teaching experience, working with departments in the humanities and the social sciences. At previous institutions, he founded four separate study abroad programs (Cuba, Brazil, Argentina, and Mexico) and he relishes creating opportunities for deep inter-cultural learning. He strives to globalize campus, foster inclusivity, and develop strong personal relationships with students.

Corey Denenberg Dehner, Associate Professor of Teaching

B.A., Biology, University of Colorado, Boulder, Colorado, 1997

J.D., Boston College Law School, 2001

PhD, Law, Policy and Society, Northeastern University, 2009

Assistant Teaching Professor, Worcester Polytechnic Institute, 2012-2017

Associate Teaching Professor, Worcester Polytechnic Institute, 2017-2023

A lawyer in her previous life, Corey Dehner's teaching, research, and advising focuses on helping students understand the complex relationship between regulatory frameworks, government agencies, human behavior, and their collective impact on the natural world. She strives to build students' confidence by helping them discover their unique leadership style. To support these efforts, she started two domestic project centers: in collaboration with the Massachusetts Department of Environmental Protection, the Water Resource Outreach Center; and, in collaboration with the World Trails Network, the White Mountains Project Center. She uses ethical, participatory, project-based learning to engage students in environmental and civic challenges. In project advising, she emphasizes respecting local knowledge, and encourages students to view the world through a different lens. She is committed to inspiring students to use their education for the greater good and to creating a learning environment that sparks curiosity, builds confidence, motivates students to work hard, and both empowers students and encourages humility.

Zoe Antoinette Eddy, Assistant Professor of Teaching

B.A., Asian Studies and Anthropology, Bowdoin College, 2010

Ph.D., Social Anthropology and Archaeology, Harvard University, 2019

Assistant Teaching Professor, Worcester Polytechnic Institute, 2020-2022

Zoe Antoinette Eddy (she/her/hers) is an interdisciplinary anthropologist whose work stands at the intersection of scholarship and activism. She blends different fields to explore how humans make sense of their landscapes, be those spaces tangible or intangible. Her research orbits around Indigenous studies, animal studies, gender studies, and critical media—she enjoys bringing these fields into classrooms as students explore their own personal subjectivities. She also runs community Indigenous education and arts workshops across New England. Her current research is a collaboration with US national crisis shelters to explore how animal welfare providers can liaison with domestic violence shelters to create better outcomes for shelter seekers. She is currently finishing her master's degree in Clinical Mental Health Counseling at Antioch University's School of Counseling, Psychology, and Therapy.

Department of Mathematical Sciences

Samuel Tripp, Assistant Professor of Teaching

B.A., Mathematics, Williams College, 2014

M.A., Mathematics, Dartmouth College, 2018

Ph.D., Mathematics, Dartmouth College, 2022

Assistant Teaching Professor, Worcester Polytechnic Institute, 2022-2023

Samuel Tripp's teaching interests center on student success through experimenting with various pedagogical techniques. Students learn best when they are engaged with the course material and view themselves as learners, and so he focuses on bringing out these active learning skills in his students in various ways. His courses bridge the gap between theory and practice, so students see how the skills they are building can be used and applied. He appreciates the focus on project-based learning at WPI, and he makes use of this in his courses. And at root, he believes we can all succeed in learning math at WPI, and helps his students believe that too.

Department of Mechanical and Materials Engineering

Alireza Ebadi, Assistant Professor of Teaching

B.S., Mechanical Engineering, Sharif University of Technology, Tehran, Iran, 2010.

Ph.D., Mechanical Engineering, University of New Hampshire, Durham, New Hampshire, 2016.

Assistant Teaching Professor, Worcester Polytechnic Institute, 2021-2023

Prof. Ebadi joined WPI as an Assistant Teaching Professor in Fall 2021. He has developed a teaching philosophy that strives to: 1) make education more interactive; 2) personalize education; and 3) facilitate interdisciplinary collaborations. Since the start of his teaching career in 2016, he has developed a teaching

philosophy that is based on an equilibrium among these three aspects. His research expertise is in experimental fluid dynamics, turbulent flows and reduced order modeling. He has been continuously publishing peer-reviewed articles since 2015 and attending professional conferences since 2011. He also serves as an invited reviewer of several scientific journals.

Fiona Levey, Associate Professor of Teaching

B.S., Metallurgical Engineering, University of the Witwatersrand, Johannesburg, South Africa, 1992

Metallurgical Engineer, Mintek, Johannesburg, South Africa, 1993-1999

Ph.D., Metallurgical Engineering, University of the Witwatersrand, Johannesburg, South Africa, 2001

Adjunct Faculty Member, Worcester Polytechnic Institute, 2011-2013

Assistant Teaching Professor, Worcester Polytechnic Institute, 2013-2019

Associate Teaching Professor, Worcester Polytechnic Institute 2019-2023

Fiona Levey uses high-impact teaching tools to foster higher order learning and create an environment where students want to learn, based on research showing that increased student engagement improves learning gains. She cares deeply about student success, both during their time at WPI and in their future careers. When determining her teaching approach, design principles and delivery methods for each course offering, she strives to understand the learning environment and combine this with teaching best practices. Her teaching research publications have centered on collaborative evaluations of new pedagogical tools to improve learning outcomes, and she received best paper award at the regional ASEE conference. She received a fellowship from WPI's Center for Project-Based Learning and spent this past summer sharing teaching materials and strategies with the broader education community.

Dual-Mission Tenured and Tenure-Track Faculty:

Department of Aerospace Engineering

Ye Lu, Assistant Professor

B.S., Aerospace Engineering, Worcester Polytechnic Institute

M.S., Aerospace Engineering, Worcester Polytechnic Institute

Ph.D., Aeronautics and Astronautical Engineering, Purdue University

Assistant Professor, Aeronautics and Engineering, Kent State University, 2019-2023

Prof. Lu's research lies at the intersection of astrodynamics and hypersonic flight dynamics, where he focuses on expanding the space mission design envelope using novel architectures and techniques. He also specializes in trajectory design, spacecraft dynamics and control, and novel exploration mission concept formulation.

Department of Biology and Biotechnology

Shane McNally, Assistant Professor

B.S., Biochemistry, University of California, Riverside

M.P.H., Infectious Diseases, University of California, Berkeley

Ph.D., Microbiology, University of California, Davis

Post Doctoral Fellow, Biology and Physics Depts., Brandeis University

Shane McNally's research focuses on understanding the molecular and physical mechanisms that cells use to control and scale the size of their internal structures with distinct aspects of their geometry.

Department of Biomedical Engineering

Yonghui Ding, Assistant Professor of Biomedical Engineering

B.Eng., Materials Science, Chongqing University, China

M.Phil., Bioengineering, Hong Kong University of Science and Technology

Ph.D., Mechanical Engineering, Hong Kong University of Science and Technology

Postdoc., Mechanical Engineering, University of Colorado-Boulder

Research Assistant Professor, Biomedical Engineering, Northwestern University, 2019-2023.

Prof. Ding's research interest is engineering biomaterial scaffolds for tissue regeneration with current emphasis on vascular tissues and musculoskeletal tissues by leveraging materials science, additive manufacturing technologies, and translational strategies. His long-term goal is to provide simple and clinically relevant solutions to patients. He was a recipient of the Best Young Scientist Award at the 4th Asian Biomaterials Congress (2014), American Heart Association Career Development Award (2021), and NIH NIBIB Trailblazer R21 Award (2022). He was passionate about teaching, educating, and training the next generation of the workforce in regenerative engineering. He has been looking to expand his skills as a professional STEM educator. He is a certificated CIRTL Associate.

Zhenglun "Alan" Wei, Assistant Professor

B.S., Computer Science, National University of Defense Technology, Hunan, China

Ph.D., Mechanical and Aerospace Engineering, University of Kansas

Assistant Prof., xxxxx?, U. Mass, Lowell, 2020-2023

In Prof. Wei's lab, the primary focus lies on developing computational and experimental techniques dedicated to studying the function and mechanics of cardiovascular diseases, including fluid-structure interaction, machine-learning enhanced computational flow modeling, mock circulatory loop, and particle image velocimetry. These state-of-the-art techniques are utilized to design, analyze, and evaluate innovative medical devices and treatments and optimize personalized therapies for real-world patients. Prof. Wei has established collaborations with clinicians, scientists, and industry professionals globally to

foster an interdisciplinary and translational approach to his research. Prestigious funding sources, including the National Institute of Health, the American Heart Association, and various private foundations, support Prof. Wei's research endeavors. He was honored with the Second Century Early Faculty Award by the American Heart Association in 2023.

Business School

Dr. Xin (Shane) Gao, Assistant Professor

B.S., Computer Science, University of Science and Technology, Beijing

M.S., Computer Science, Bristol University, Bristol

M.S., Quantitative Finance, Rutgers University

Ph.D., Finance, University of Houston

Assistant Professor, Finance, Sacred Heart

At Sacred Heart University, Prof. Gao taught financial management, investments, and practical python for finance. He has a background in Computer Science and has several years of work experience in software development, project management, and data analytics. Prof. Gao's research interests include asset pricing, institutional investors, commodities, and financial econometrics.

Department of Computer Science

Jun Dai, Associate Professor

B.S., Information Security, University of Science and Technology of China

M.S., Network Control, University of Science and Technology of China

Ph.D., Cybersecurity, Pennsylvania State University, 2014

Associate Professor, Dept. of Computer Science, California State University, Sacramento.

Before joining WPI, Prof. Dai was the Director of the NSA/DHS CAE-designated Center for Information Assurance and Security (CIAS) at California State University, Sacramento. His research interests mainly lie in network and distributed system security, as well as AI and security, specifically focusing on intrusion detection, vulnerability analysis, secure programming, and cybersecurity education. Prof. Dai has published in prestigious academic conferences or journals such as IEEE TIFS and ACM SIGMOD. He is the Workshop Chair of ACM CCS 2023 and has been a reviewer for top security or networking journals including TIFS, TDSC, TVT, and TMC. His projects are funded by National Science Foundation (NSF) and National Security Agency (NSA).

Roe Shraga, Assistant Professor

B.Sc., Ind. Eng. and Management, (Info. Management Eng.), Technion, Israel Institute of Technology

M.E., Technion, Israel Institute of Technology

Ph.D., Data Science, Technion, Israel Institute of Technology

Postdoctoral Fellow, Khoury College of Computer Science, Northeastern University

Prof. Shraga's research mainly revolves around data discovery and integration and combines techniques from data management, machine learning, information retrieval and human-in-the-loop. Prof. Shraga's research has been published in top-tier conferences such as SIGMOD, VLDB, SIGIR, WWW, and ICDE. He is a recipient of the Council for Higher Education [VATAT] scholarship for outstanding data science postdocs. He is also a recipient of several PhD fellowships including the Leonard and Diane Sherman Interdisciplinary Fellowship (2017), the Daniel Excellence Scholarship (2019), and the Miriam and Aaron Gutwirth Memorial Fellowship (2020).

Xiaoyan (Sherry) Sun, Associate Professor

B.E., Electronics and Information Engineering, Shandong Normal University

M.E., Pattern Recognition and Intelligent Systems, University of Science and Technology of China

Ph.D., Information Sciences and Technology, Pennsylvania State University, 2016

Associate Professor, Dept. of Computer Science, California State University, Sacramento.

The emphasis of Prof. Sun's Ph.D. work was on cybersecurity. Her research interests lie in cybersecurity, including enterprise-level network security and digital forensics, AI related security, advanced persistent threat detection, and moving target defense, etc. Prof. Sun is also passionate about education in cybersecurity and digital forensics. Her work in cybersecurity research and education has been supported by National Science Foundation (NSF), National Security Agency (NSA), and National Institute of Standards and Technology (NIST). Prof. Sun has served as the publicity co-chair for CCS'20, the TPC and reviewer for top cybersecurity journals and conferences, such as TDSC, TIFS, ToN, and ACSAC. She is currently also serving as the Vice President for Silicon Valley Cybersecurity Institute, a non-profit organization that promotes cybersecurity research and education.

Hanmeng (Harmony) Zhan, Assistant Professor

B.A., Mathematical Economics, University of Waterloo

B.Ec., Statistics, Xiamen University

M.S., Mathematics, Combinatorics and Optimization, University of Waterloo

Ph.D., Combinatorics and Optimization, University of Waterloo

Postdoctoral Fellow, Simon Fraser University; York University; and Université de Montréal.

Prof. Zhan's research explores the fascinating intersection of graphs and quantum phenomena. She translates complex problems in quantum computing and quantum information into graph-theoretic frameworks, which she tackles using powerful algebraic methods. Prof. Zhan's interdisciplinary work on quantum walks and SIC-POVMs has been published in journals spanning a wide range of topics, including quantum information, combinatorics, algebra and physics. She has also coauthored an introductory book about discrete quantum walks on graphs and digraphs. For her Ph.D. work, she was awarded the University Finalist for the Governor General's Gold Medal, first place in the inaugural Mathematics Doctoral Prize competition, and the Outstanding Achievement in Graduate Studies designation. With a genuine passion for mentorship and a deep commitment to inclusivity, Prof. Zhan has actively co-supervised several student projects, including an international summer research program hosted by the Fields Institute, where her team published papers on top journals and received the best presentation award. She finds great fulfillment in collaborating with both graduate and undergraduate students from diverse backgrounds, and she eagerly anticipates the rewarding experience of supporting aspiring researchers at WPI.

Department of Electrical and Computer Engineering

Bo Tang, Associate Professor

B.S., Geo-Physics, Central South University, China

M.S., Signal and Information Processing, University of Chinese Academy of Sciences, China

Ph.D., Electrical Engineering, University of Rhode Island

Assistant Professor, Dept. of Computer Science, Hofstra University, 2016-2017

Assistant Professor, Dept. of Electrical and Computer Eng., Mississippi State University, 2017-2022

Prof. Tang's research interests lie in the general areas of bio-inspired artificial intelligence (AI), AI security, edge AI, and their applications in Cyber-Physical Systems (e.g., wireless networks, autonomous vehicles, and power systems). He is the recipient of MSU Emerging Research Scholar Award in 2022, NSF CAREER Award in 2021, and NIH New Investigator/Early Career Award in 2019. He is also a Senior Member of IEEE and an Associate Editor for IEEE Transactions on Neural Networks and Learning Systems.

Department of Humanities and Arts

Lucy Caplan, Assistant Professor

A.B., History and Literature, Harvard University

M.A., American Studies, Yale University

Ph.D., American Studies and African American Studies, Yale University

Assistant Director of Studies, History and Literature program, Harvard University

Lucy Caplan is an interdisciplinary historian of music, race, and culture in the United States. Her research and teaching interests include African American music, opera and musical theater, and cultural criticism. At present, she is writing a book about how early-twentieth-century African Americans redefined the genre of opera as a wellspring of antiracist activism, collective sociality, and aesthetic innovation. In conjunction with her academic work, Prof. Caplan enjoys writing program notes, creating educational materials for arts organizations, and speaking for public audiences. Her research and writing have been supported by the Society for American Music, the Rubin Institute for Music Criticism, and the Howard Foundation at Brown University.

Department of Integrative and Global Studies

Tsitsi B. Masvawure, Assistant Professor

B.Sc., Sociology, University of Zimbabwe

M.Sc., Sociology and Social Anthropology, University of Zimbabwe

M.Sc., Reproductive and Sexual Health Research, London School of Hygiene and Tropical Medicine

DPhil., Anthropology, University of Pretoria

I am a medical anthropologist and feminist scholar whose research focuses on issues of gender, sexuality and health. I am primarily interested in the HIV pandemic and have conducted research on HIV prevention and treatment in various countries in Africa. In the last five years I have served as qualitative research consultant on studies examining HIV treatment models in Zimbabwe and Ethiopia, HIV-risk among female and male sex workers in Kenya, community health worker models in South Africa and HIV knowledge and attitudes in fishing communities in Sierra Leone. I have also conducted research on maternal health in Uganda and Zambia and have recently been invited to sit on the advisory board of Reimagining Reproduction, a Wellcome Trust funded project based in South Africa. Prior to moving to the U.S., I was the co-founder and assistant director of an HIV prevention non-profit that implemented a gender equity and HIV prevention program in multiple university campuses in Zimbabwe. I also worked variously as a gender consultant, project planning and management consultant, HIV prevention training consultant and rapporteur for international development agencies and public and private agencies. In my previous job, I directed the health studies program at the College of the Holy Cross, and taught various courses on global health, including advising student research projects. I have also taught courses on health at Clark University in their masters in health sciences program (Dept of International Development, Community and Environment). At WPI, I will assist in setting up the masters in global health program and teach courses on global health, and I will continue to work on my current research projects, namely, a storytelling project to document the history of AIDS Project Worcester, and a racial equity program with a community health center in Worcester. I currently serve as an associate editor-in-chief for the *American Journal of Health Promotion* and sit on the editorial boards of *Culture, Health and Sexuality* and *Medical Anthropology*.

Department of Mathematical Sciences

Andre Nachbin, Harold J. Gay Professor

B.S., Civil Engineering, Federal University of Rio de Janeiro, Brazil

M.S., Civil Engineering, Federal University of Rio de Janeiro Brazil

Ph.D., Mathematics, Courant Institute, New York University

Instructor, Ohio State University

Assistant Professor, New Jersey Inst. of Technology

David Parkin Visiting Professor, University of Bath, UK, 2013

Visiting Professor, Math Dept., MIT, 2015

André Nachbin works in applied mathematics on mathematical modeling and scientific computing applied to waves in fluids. After returning to Brazil, he became a member of the Editorial Board of the SIAM J. on Applied Mathematics for 12 years and then the Program Director of the SIAM Activity Group on Nonlinear

Waves and Coherent Structures. This year Dr. Nachbin was named SIAM representative in the Math Council of the Americas. Dr. Nachbin has always been active in applied Mathematics in the US. In 2006, he was awarded the National Medal of Scientific Merit by President Lula. In 2014, he became a member of the Brazilian Academy of Sciences.

Department of Mechanical and Materials Engineering

Thomas Lundin Christiansen, Professor

M.S., Chemistry & Materials Science, Technical University of Denmark, 2001

Ph.D., Materials Science and Surface Engineering, Technical University of Denmark, 2005

Senior Researcher, Technical University of Denmark, 2008-2017

Associate Professor, Technical University of Denmark, 2017-2023

Thomas Lundin Christiansen is the Technical Director of the Center for Heat Treating Excellence (CHTE) at WPI. His research interests are gas-metals interactions, (thermochemical) surface engineering and microstructure optimization for improving materials performance. In 2010 he co-founded the company Expanite that offers surface hardening and heat treatment of stainless steels. In 2014 he co-founded the company TRD Surfaces that offers surface hardening solutions for steels. From 2022 to 2023 he was president of the Danish Metallurgical Society. He received the young elite researcher price from the Danish Research Council in 2008. He has over the years been highly active in activities relating to innovation (start-ups and commercialization) and he has a keen focus on the fruitful interplay between science and technology.

Department of Physics

Romain Murenzi, Professor

B.A., Mathematics, National University of Burundi

M.S., Physics, Catholic University of Louvain

Ph.D., Physics, Catholic University of Louvain

Master of Law, Information Technology and Telecommunication, Strathclyde University, UK

Chair, Physics Department, Clark Atlanta University, 1999-2001.

Visiting Professor, Institute of Advanced Computer Studies (UMIACS), University of Maryland, 2009-2011

Prof. Murenzi worked at Clark Atlanta University as Principal Investigator at the NSF (National Science Foundation) Center for Theoretical Studies of Physical Systems (CTSPS) from 1992 to 2001. From 2001 to 2009, he served as Rwanda's Minister of Education, Science and Technology and Scientific Research and as Minister in the President's Office in Charge of Science and Technology, and Scientific Research. In 2009 he was a senior scholar at the American Association for the Advancement of Science (AAAS) Center for Science, Technology and Sustainable Development; he served as Director from 2010–2011. Until November 2023, he served as the Executive Director of The World Academy of Sciences (TWAS) for the advancement of science in developing countries, a UNESCO program unit overseeing also the administration of Organization for Women in Science for the Developing World (OWSD), and the InterAcademy Partnership (IAP). Prof. Murenzi initially joined TWAS in April 2011 for five years. He then spent 14 months at UNESCO, Paris, as the Director of the Division of Science Policy and Capacity Building, and Executive Secretary of International Basic Science Programme (IBSP). The UN Secretary-General appointed him as Chair for the feasibility study of the UN Technology Bank for the Least Developed Countries (November 2014) and to serve on the 10-Member Group to support the Technology Facilitation Mechanism (January 2016) for sustainable development goals (SDGs). He also served at several advisory boards, including as a member of ITU (International Telecommunication Union) and UNESCO Broadband Commission for Sustainable Development, Carnegie Mellon University President's Global Advisory Council, Dian Fossey Gorilla Fund International, External Science Advisory of the International Monetary Fund (IMF), and Steering Committee of EAIFR (East Africa Institute for Fundamental Research, a physics Category 2 UNESCO institute). Dr. Murenzi research interests include: Wavelets, Groups, and Coherent States: Links Between Quantum Mechanics and Signal Processing in One and More Dimensions. He is also interested in science technology and innovation

policy, science for society, science diplomacy, and science advice to governments.

Department of Robotics Engineering

Constantinos Chamzas, Assistant Professor

Diploma (M.S.), Electrical and Computer Engineering, Aristotle University of Thessaloniki, Greece

Ph.D., Computer Science, Rice University

Prof. Chamzas' research interests lie in algorithmic robotics, focusing on integrating learning-based methods with classic robotic planning algorithms. He has received the NSF-GRFP fellowship during his Ph.D. studies, and his work was nominated for best paper award in Cognitive robotics at ICRA2021.

Kevin Leahy, Assistant Professor

B.A., Economics, Boston University, 2009

M.S., Mechanical Engineering, Boston University, 2016

Ph.D., Mechanical Engineering, Boston University, 2017

Prof. Leahy's current work involves AI for autonomous systems, with an emphasis on formal methods and multi-agent systems. After receiving his Ph.D., from 2017 to 2023, he was a member of the Technical Staff at MIT Lincoln Laboratory. At MIT Lincoln Laboratory he focused on a variety of domains, including learning decentralized control strategies for multi-agent systems, researching collision avoidance in aviation, and planning for heterogeneous teams from high-level specifications. He currently serves as Junior Co-chair on the IEEE Technical Committee for Verification of Autonomous Systems.

Department of Social Science and Policy Studies

Patricia Agupusi, Assistant Professor

B.A., Philosophy, Ondo State University, Nigeria

M.A., International Law and Diplomacy, University of Lagos, Nigeria

M.A., International Economics and Trade, University of East Anglia, UK

Ph.D., International Development, University of East Anglia, UK

Patricia Agupusi is a political economy scholar with backgrounds in philosophy, international law, and economics. Her research interests include state capacity, political violence, and the political economy of development. Prof. Agupusi is currently working on her second book – tentatively titled “State Capture and the Politics of the ‘two economies’ Debate in South Africa 25 years after” She is also conducting fieldwork on the rise of domestic terrorism/insurgencies. Patricia has researched Nigeria, South Africa, Ghana, Kenya, Rwanda, etc. Prof. Agupusi's work has appeared in peer-reviewed journals. Her first published book, of which she is the principal author, is titled *Homegrown Development in Africa: Illusion or Reality?* (Routledge 2015).

**Full-time Secured and Critical Need Teaching Faculty Members,
Research Faculty Members, Visiting Faculty Members, and
Others with Teaching and Research Responsibilities**

Department of Biology & Biotechnology

Floyd Brownewell, Professor of Practice

B.S., Parks and Recreation, Services Management, Slippery Rock University

B.S., Environmental Sciences, Chemistry Emphasis, Johnson State College

M.A., Education, Secondary Physical Sciences, Johnson State College

Ph.D., University of Vermont

Postdoctoral Fellow, Stanford University

Prof. Brownewell is deeply engaged in curriculum development aimed at improving student learning outcomes. Prof. Brownewell has more than ten years of industry experience where he managed laboratories and product quality and led teams in method development, system improvements and new product support. He has mentored technicians, engineers, and scientists in problem solving, laboratory techniques, and statistical process evaluation. Working at the intersection of science and industry, Prof. Brownewell has a deep understanding of industry needs and is committed to providing students with current and industry-relevant skills.

Department of Biomedical Engineering

Leonard Polizzotto, Assistant Teaching Professor

B.S., Electrical Engineering, WPI, 1970

M.S., Electrical Engineering, WPI, 1972

Ph.D., Combined Elec Eng, Perceptual Psychology, and Ophthalmology, Tufts Univ., 1982

At WPI, Prof. Polizzotto is currently Distinguished Executive in Residence. He is also a program manager for the Neurocritical Care Society Curing Coma Campaign. He works with individuals, including faculty and students, to help them focus their research and projects on important problems and develop innovative solutions. In addition, he is working with a team of neuro-intensive care clinicians in an effort to find a cure for coma. He is a former vice president at Draper Laboratory, SRI International, and the Polaroid Corporation, where he helped leverage core technologies and capabilities for new applications. He is a Charter Fellow in the National Academy of Inventors, holds twelve patents and is a former member of the Smithsonian Lemelson Center for Invention and Innovation advisory board. While a student at WPI, he was an NCAA Post Graduate Scholar. He has also completed the University of Virginia Darden School TEP program. He is the co-author of articles on efforts to cure coma, color perception, and innovation and has published two books on drum set instruction.

Business School

Dr. John (Jed) Lindholm, Assistant Teaching Professor

B.S., Economics, Northeastern University

M.A., Agricultural Economics, Penn State University

Ph.D., Workforce Education and Development, Penn State University

Prof. Lindholm is a senior-level human resource total rewards consultant working with companies on performance and rewards change. He has taught a variety of Organizational Behavior courses for the WPI Business School since 2010, and has taught at Penn State, Clark University, and internationally in China, Singapore, Israel, and Poland. He joins the Business School full time for AY23-24 to cover for sabbatical leave faculty. Jed brings a passion for environmental and community sustainability that began in his youth while working on a dairy farm in western Connecticut. This passion, and personal business experience, led him to his graduate work at Penn State's College of Agriculture in Ag. Economics, where his research in low

input farming production and agricultural stakeholder focus groups helped write the college's first vision statement for the food system. As an HR leader, Jed continues to develop research, teaching, and workplace programs that promote sustainability by designing jobs that link individual and corporate actions to sustainable goals. He is one of three WPI professors collaborating with teachers from Haverford and Dickenson Colleges, with undergraduates in the United Arab Emirates to transform their local and global contexts into more sustainable communities in the context of the UN Sustainable Development Goals.

Department of Chemistry and Biochemistry

Raúl Orduña Picón, Assistant Teaching Professor

B.S., Chemistry, Universidad Nacional Autónoma de México (UNAM)

M.Ed., Chemistry Education, Universidad Nacional Autónoma de México (UNAM)

Ph.D., Chemistry Education Research, University of Massachusetts, Boston

Postdoctoral Fellow, School of Education, University of California, Irvine

Postdoctoral Fellow, Chemistry Dept., U. Mass, Boston,

Prof. Picón will teach undergraduate courses in general chemistry in academic year 2023/2024. His teaching approach focuses on making students aware of their heterogeneity of thinking, leveraging students' cultural practices, and promoting equity and social justice through chemistry teaching. Dr. Picon's research focuses on both student learning and teaching practices. His work has revealed the power of developing students' multiple ways of thinking, doing, and being to disrupt settled forms of teaching and learning chemistry.

Department of Computer Science

Taylor Andrews, Instructor

B.S., Computer Science, WPI

M.S., System Design and Management (SDM), MIT Sloan School of Management

M.S., Electrical Engineering and Computer Science (EECS), MIT School of Engineering

After graduating from WPI, Taylor Andrews joined VMware's industry-leading hypervisor team for five years before pivoting to teaching and academia. As an Instructor, Taylor taught 41 students at Digital Media Academy's Summer Tech Camp at Harvard University. He worked with middle and high school students to define and teach individual projects of their own artistic vision across Arduino robotics, breadboard circuitry, Raspberry Pi laptops (Pi-Top), LEGO robotics, and Microbit embedded controllers. While at MIT, Taylor worked as a Research Assistant for Cybersecurity at MIT Sloan (CAMS) in the CRED-C critical infrastructure team, while part of the SDM Department, focusing in Systems Engineering and System Dynamics. While completing his second M.S., Taylor worked with Eran Egozy (of Harmonix, Guitar Hero, and Rock Band) to create a new collaborative lab platform for students to gain experience with music theory, MIDI programming, and the MIT Music Department through interactive and generative music programming assignments.

Sakire Arslan Ay, Associate Teaching Professor

B.S., Computer Science, Bogazici University

M.S., Computer Science, University of Southern California

Ph.D., Computer Science, University of Southern California

After received her B.S. degree Prof. Arslan worked as a software engineer, and after two years she started her graduate study. Her research was supervised by Dr. Roger Zimmermann and Dr. Seon Ho Kim. Her research interests include large-scale geospatial data management and indexing, sensor-rich video annotation and search, and mobile video management. She is a member of ACM.

Yu-Shan (Sami) Sun, Assistant Teaching Professor

B.S., Computer Science, Denison University, 2010

Ph.D., Computer Science, Clemson University, 2018

Lecturer, School of Computing, Clemson University's School of Computing, 2020-2023

Prof. Sun's research interests are computer science education, software engineering, and formal methods and verification. Recently, he was a co-PI on an NSF Research Grant that studied student impediments in understanding and reasoning about code through a novel online reasoning system (BeginToReason). Outside of his research interests, Dr. Sun is passionate about teaching programming and software engineering courses. His novice students focus on problem-solving techniques before programming their solutions. On the other hand, the emphasis in his software development courses has been on requiring and enforcing careful analysis, design, and documentation in assignments before students write an implementation in the specified language. These courses expose students to object-oriented (OO) programming using Java. Students learn to apply software design principles and patterns, design unit tests for programs they write, as well as to write formal program specifications and use reasoning principles.

Department of Electrical and Computer Engineering

Mohammad Mostafa Asheghan, Assistant Teaching Professor

B.S., Electrical Engineering, Sharif University of Technology, Iran

M.S., Electrical Engineering, University of Tehran, Iran

Ph.D., Electrical Engineering, Tarbiat Modares University, Iran, 2011

Ph.D., Multimedia, University of Carlos III, Spain, 2014

Postdoctoral Researcher, University of Carlos III, 2014-2016

Assistant Professor, University of Science and Research, Iran

Research Professor, Northeastern University

Research Professor, Harvard Medical School

Mostafa Asheghan's research interests include several aspects of model-based and data driven-based control, robust and nonlinear dynamics with a focus on biomedical applications, chaos synchronization, fractional-order systems and complex networks. He has recently extended his research areas to statistical shape analysis (SSA) combined with machine learning with a focus on biomedical applications, modeling human organs by electrical circuits and soft robotics. His postdoctoral research was involved in a project related to the modeling, stability analysis and nonlinear control of the electrical activity of the human heart. In October 2021, he received Annual Excellence Research Award in "Discover Brigham" event for his novel research in the field of leveraging chaos theory in early detection of arrhythmia. Prof. Asheghan is passionate about teaching and mentoring students. He has extensive teaching experiences to Electrical Engineering and Bioengineering students at undergraduate, master and Ph.D. levels in Iran, Spain and United States. He has also supervised several student projects.

Suat Utku Ay, Associate Teaching Professor

B.S., Electronics and Communication Engineering, Yildiz Technical University, Turkey

M.S., Electrical Engineering, University of Southern California, 1997

Ph.D., Electrical Engineering, University of Southern California, 2004

Asst./Assoc. Prof., Electrical and Computer Engineering Dept., University of Idaho, 2007-2024

Suat Ay worked in semiconductor industry between 1997 and 2007 as VLSI Design Engineer specializing in the areas of analog/mixed-signal VLSI design and CMOS image sensors. Before joining WPI, he was the founder and director of Dual-Beam Focused Ion Beam/Scanning Electron Microscopy (FIBSEM) Laboratory and Service Center in the College of Engineering of the University of Idaho (2016-2024). His research interests are in analog and mixed-signal integrated circuit (IC) design for new class of baseband and RF circuits and systems, in design of next generation visible and infrared (IR) CMOS image sensors, circuits, and systems, in self-powered, ultra-low-power, and smart CMOS sensors and circuits for bioengineering and wireless communication systems, and in radiation hard microelectronics and image sensor design. He is a senior member of IEEE and member of SPIE societies, and registered professional engineer (P.E.) in Electrical and Computer engineering.

Gregory Noetscher, Assistant Teaching Professor

B.S., Biomedical Engineering, Worcester Polytechnic Institute

M.S., Electrical Engineering, Worcester Polytechnic Institute

Ph.D., Electrical & Computer Engineering, Worcester Polytechnic Institute, 2014

Senior Research Electrical Eng., US Army Combat Capabilities Develop. Com. Soldier Cent., Natick, MA

Greg Noetscher's research interests include the design of complex and anatomically realistic human body models for electromagnetic simulation, numerical methods, antenna design, and power systems. The main product of his Ph.D. dissertation, the Visible Human Project – Female Computational Phantom, was certified by the IEEE International Committee on Electromagnetic Safety, Technical Committee 34 for the purposes of estimating peak Specific Absorption Rate values in the bodies of users of wireless communication devices. This model has also provided the basis for an FDA approved Medical Device Development Tool for MR labeling of passive embedded implants to estimate device safety and simulate corresponding heating while undergoing MR procedures. At the US Army Combat Capabilities Development Command Soldier Center in Natick, MA, he modeled and developed autonomously controlled and ballistic cargo aerial delivery systems; he has been awarded for his service on multiple occasions, including being honored with the US Army Commander's Award for Civilian Service in 2009 and as the 2015 DEVCOM SC Project Officer of the year. As an adjunct faculty member at WPI, he received the Outstanding Professor Award from WPI's Eta Kappa Nu ECE Student Honor Society. He also received the 2023 Community Service Award from WPI's IEEE Student Chapter. He is a senior member of IEEE, a review editor for *Frontiers in Human Neuroscience*, and has served as the Conference Secretary for the annual Brain and Human Body Modeling Conference in August of 2020-2023. He is the author of over 95 conference and journal papers, four textbooks, and holds four patents.

Department of Humanities and Arts

Alexander Herbert, Visiting Teaching Professor of History

B.A., History and Russian Studies, Wheaton College (MA)

M.A., Russian History, Indiana University

Ph.D., Modern Russia, Environmental History, Brandeis University

Alexander Herbert is an expert in the history of the Soviet Union and Global Environmental History. His research examines the interrelations of science, technology, and environmental change in the late USSR. Prof. Herbert is also interested in the intersection of popular culture and education and has published two books: the first on the history of punk rock in the Soviet Union and Russia, and another that uses horror films in the late USSR to examine the anxieties and fears of late Soviet society. He has also taught classes on the history of capitalism, radical politics in Europe, film history, and underground culture. In Russia, he worked and researched at the State Historical Museum in Moscow, the archives of the Communist Party, National Library of Russia, and at the Environmental Laboratory in the Higher School of Economics in St. Petersburg. In 2022, Prof. Herbert was a Fulbright Scholar in St. Petersburg when the war between Russia and Ukraine broke out.

David Ibbett, Visiting Assistant Teaching Professor

M.A., Music, Clare College, University of Cambridge

M.Mus., Music Composition, Guildhall School of Music and Drama

Ph.D., Music Composition, University of Birmingham UK

David Ibbett is a composer, educator and musical advocate for science. He directs the Multiverse Concert Series, a project that combines music and science in live performance. Prof. Ibbett composes electro-symphonic music: a fusion of classical and electronic styles that interweaves influences from songs, symphonies, pop, rock and electronica. Musical strands are met with inspiration from the work of scientists: sonified data, musical metaphors for scientific concepts, and experimental sound and images from contemporary research. He is thrilled to introduce his students to these concepts through creative, project-

based learning. His Music and Science Practicum (now in its 4th year) empowers students to produce their own science-art performances in a multimedia concert, with each composition highlighting groundbreaking research from WPI labs. Prof. Ibbett collaborates with musicians, scientists, students and artists. He has collaborated with major research institutions and museums including the Museum of Science, Boston, the Worcester Ecotarium, Christa McAuliffe Center, and was the first Guest Composer at Fermilab, the Fermi National Accelerator Laboratory in 2020. Recent works include *Octave of Light* (2020) an album of exoplanet music with the Harvard-Smithsonian Center for Astrophysics, and *Black Hole Symphony* (2022) an orchestral journey to the heart of a black hole galaxy for the Charles Hayden Planetarium, and *Climate Hope Concert* (2023) with the Christa McAuliffe Center. He is currently composing *Mars Symphony* for premiere in 2024 at the Museum of Science, Boston.

Sarah Lucie, Visiting Assistant Teaching Professor

B.A., Theatre and English, Boston College

M.A., Performance Studies, New York University

Ph.D., Theatre and Performance, The Graduate Center, CUNY

Prof. Lucie's research approaches contemporary performance and digital art through new materialism, ecocritical theory, and posthumanism. Her current book project, *Acting Objects: Staging New Materialism, Posthumanism and the Ecocritical Crisis in Contemporary Performance*, explores the critical eco-conscious potential of the human–non-human relationships on the contemporary stage. Her writing has appeared in *Theatre Journal*, *Performance Research*, *The Journal of Dramatic Theory and Criticism*, *Theatre Topics*, *PAJ*, and *Etcetera*, as well as *The Routledge Companion to Theatre and Politics* (2019) and *Machine Made Silence: The Art of Kris Verdonck* (2020). Her co-edited collection, *Revealing Posthuman Encounters in Performance*, is forthcoming through Routledge. She also contributes to a collaborative writing collective, whose book *Mourning the Ends: Collaborative Writing and Performance* is forthcoming with Punctum Books. Prof. Lucie is media editor of *Performance Studies: An Introduction*, 4th Edition, as well as Assistant Editor of *TDR: The Drama Review*. Prior to joining WPI, she taught courses in theatre history, script analysis, performance research, musical theatre, animal studies, and critical theory at NYU, Marymount Manhattan College, Drew University, The New School, City College, and Baruch College. She has also worked professionally as a dramaturg, actor, producer, and stage manager, and served as General Manager for East Coast Artists.

R. Maxwell Racine, Visiting Assistant Teaching Professor

B.A., Philosophy; Economics, Boston College

M.A., Philosophy, Boston College

Ph.D., Philosophy, Fordham University

Prof. Racine's research takes an interdisciplinary approach to philosophy, examining the way that stories in life and literature can be sources of understanding. Prof. Racine's work focuses on the benefits and pitfalls of narrative understanding in contexts of structural oppression. He has taught introductory courses in philosophy as well as upper-level electives in ethics and social and political philosophy.

Interactive Media and Game Development Program

Rodney DuPlessis, Assistant Teaching Professor

B.A., Interdisciplinary Major in Music and Psychology, St. Thomas University

M.A., Music Composition, University of California, Santa Barbara

M.S., Media Arts & Technology of California, Santa Barbara

Ph.D., Music Composition, University of California, Santa Barbara, 2021

Rodney DuPlessis Ph.D. dissertation was on using quantum physics models in music composition. Since then, he has published in the *Computer Music Journal*; been invited to talk at the Quantum Sounds Symposium; and presented papers, demos, and music at 13 conferences around the world. He has received numerous international awards and recognition for his music. His various software projects have been downloaded by some 10,000 musicians and other creatives.

Karen Stewart, Assistant Teaching Professor

B.A., Studio Art, Montana State University-Bozeman

M.S., Public Relations, Montana State University-Billings

Ph.D., Communication, Arizona State University

Karen Stewart's scholarly work explores visual narratives, content-creator communities, and arts-based collaboration and learning.

Department of Mathematical Sciences

Yonatan Ashenafi, Post-Doctoral Scholar

B.A., Mathematics, Dordt University

M.S., Applied Mathematics, Rensselaer Polytechnic Institute

Ph.D., Mathematics, Rensselaer Polytechnic Institute

Postdoctoral Fellow, University of Alberta

Yonatan Ashenafi's research focuses on biomathematics, particularly in the modeling of motility in various forms and aspects of microscopic life. He typically utilizes stochastic modeling, asymptotic analysis, and simulations. In the past, he has worked on modeling the motility of aggregate microswimmers and the atypical gliding motion in algae called diatoms. Dr. Ashenafi has also worked on applying reinforcement learning methods. He enjoys teaching classes with active learning principles.

Dana Ferranti, Assistant Research Professor

B.A., Mathematics and Computer Science, Clark University

Ph.D., Mathematics, Tulane University

Dr. Ferranti's research concerns numerical methods for microscale fluid mechanics and dynamical systems inspired by biology.

Ralihe Raul Villagran Olivas, Post-Doctoral Scholar

B.S., Mathematics, Autonomous University of Sinaloa.

M.S., Mathematics, Center for Res. and Adv. Studies, National Polytechnic Institute (CINVESTAV-IPN)

Ph.D., Mathematics, Center for Res. and Adv. Studies, National Polytechnic Institute (CINVESTAV-IPN)

Postdoctoral Researcher, Dept. of Mathematics and Comp. Sci., Eindhoven University of Technology

Ralihe Villagran's research focuses on algebraic combinatorics/graph theory (with some intersection with extremal combinatorics and combinatorial number theory), frequently using computational tools and studying its algorithmic aspects.

Department of Mechanical and Materials Engineering

Richard Bradshaw, Research Professor (as of April 2023)

B.S., Mechanical Engineering, Worcester Polytechnic Institute, 2000

M.S., Mechanical Engineering, University of Massachusetts, Amherst, 2004

Ph.D., Mechanical Engineering, University of Massachusetts, Amherst, 2006

Having spent the last 12 years in the technical start-up world, Rich Bradshaw has spent his career thus far working in a variety of industries ranging from aerospace at Draper Laboratory to heavy industry sectors such as energy storage at SustainX and more recently molten metal production at Boston Metal where he served as the V.P. of Engineering. Rich has worn many hats and performed a full spectrum of technical roles ranging from machine and system design to building technical teams to execute on development projects. He has served as Principal Investigator on multiple government grants and cooperative agreements (DOE, ARPA-E) pursuing commercialization and technology scaling activities in metals extraction using high-temperature electrolysis techniques. Rich re-joins WPI (as faculty not a student!) to continue contributing

to research and development activities in the areas of high temperature materials processing, metals extraction and materials recovery.

Xiaotu Ma, Assistant Research Professor (as of Oct. 1, 2022)

B.S., Chemistry, Jilin University, China, 2011

M.S., Materials Science & Engineering, Stevens Institute of Technology, 2017

Ph.D., Materials Science & Engineering, Worcester Polytechnic Institute, 2021

Postdoctoral Fellow, Dept. of Mechanical & Materials Engineering, Worcester Polytechnic Institute, 2022

Xiaotu Ma's research interests focus on the fields of advanced materials for Li-ion batteries and Na-ion batteries, as well as the development of innovative processes for the recycling and upcycling of spent batteries. He has authored 20 articles in leading international journals in his areas of expertise. Additionally, his work has led to the filing and publication of five patents.

Medhi Mortazavi, Associate Teaching Professor

B.S., Mechanical Engineering, KN Toosi University, Iran, 2007

M.S., Mechanical Engineering, Michigan Tech, MI, 2011

Ph.D., Mechanical Engineering, Michigan Tech, MI, 2014

Assistant Professor, Mechanical Engineering, Western New England University, 2016-2022

Associate Professor, Mechanical Engineering, Western New England University, 2022-2023

Following his graduate studies, Prof. Mortazavi gained two years of practical experience in mechanical engineering, specifically in the HVAC industry, in the state of New York from 2014 to 2016. In August 2016, he joined the faculty at WNE as an Assistant Professor of Mechanical Engineering and was subsequently promoted to the rank of Associate Professor with tenure in Summer 2022. In January 2023 he joined the faculty at WPI as an Associate Teaching Professor.

Manish Kumar Sinha, Assistant Research Professor

B.Sc., Chemistry, Vinoba Bhave University, India, 2005

M.Sc., Chemistry, Vinoba Bhave University, India, 2008

Project Assistant, CSIR-National Metallurgical Laboratory, India

Ph.D., Chemistry, Banaras Hindu University, Varanasi, India, 2017

Postdoctoral Fellow, Chemistry Dept., University of the Free State, South Africa, 2018-2021

Postdoctoral Research Fellow, Mechanical and Materials Engineering, WPI, 2021-2023

Manish Sinha's research interests include process development for base/precious/rare earth metals extraction and recovery from primary and secondary resources. His research at CSIR- National Metallurgical Laboratory focused on hydrometallurgical recovery of metal values from solid and liquid wastes. He has recently extended his research areas to purification and recycling of Aluminum. He is the author of 21 international journal articles, 2 book chapters and several conference papers.

Department of Robotics Engineering

Vincent Aloï, Associate Teaching Professor

B.S. Mechanical Engineering, the University of Tennessee, Knoxville, 2016

M.S. Mechanical Engineering, the University of Tennessee, Knoxville, 2021

Ph.D. Mechanical Engineering, the University of Tennessee, Knoxville, 2022

Vincent Aloï has a passion for soft robotics. To date, his research interests have focused on modeling, sensing, and controlling flexible structures. This research was performed with the REACH lab at UTK and has been published and presented to various robotics conferences and journals. Currently, Vince has shifted focus to engineering education and helping students achieve their academic and research goals. The past year, he has been working as an engineering instructor, advising and teaching undergraduates. The courses covered topics from engineering dynamics to computer aided manufacturing.

Department of Social Science and Policy Studies

Achirri Ismael, Assistant Teaching Professor

B.A., French and English Linguistics, University of Yaoundé, Cameroon

Maîtrise in Black Literatures of French & English Expression. University of Yaoundé, Cameroon

Master's in Education, École Normale Supérieure, Yaoundé-Cameroon

B.A., Hons in Anthropology, Walter Sisulu University, Eastern Cape, South Africa

M.Phil., Visual Anthropology, University of Tromsø, Norway

Ph.D., Anthropology, University of Michigan

Achirri Ismael previously held the position of program manager of the USAID-WPI WASH program in Eastern Ethiopia. Prof. Ismael is a multidisciplinary scholar with a keen interest in praxis - interdisciplinary teaching, project-based pedagogy, ethnographic fieldwork, and field philosophy. His current research focuses on the environment, regenerative sustainability, cross-cultural design, and development.

Kaitlyn Schneider, Visiting Assistant Teaching Professor

B.S., Psychology Science, Worcester Polytechnic Institute

M.S., Clinical Mental Health Counseling, Villanova University

Ph.D., Counseling Psychology, Northeastern University

Kaitlyn Schneider's clinical focus is the delivery of empirically supported interventions with children, adolescents, and families. Her research interests include exploring how individual (e.g. experiencing post-traumatic symptoms, mindfulness) and environmental factors (e.g., relational risk, trauma exposure, exposure to natural environments) influence mental health/behavior.

Department of Air Force Aerospace Studies

LTC Adam J. Messer, Commander of Air Force ROTC

B.S., Operations Research, United State Airforce Academy, CO

Air and Space Basic Course, Maxwell AFB, Ala.

M.S., Operations Research, Air Force Institute of Technology, Dayton, OH, 2011

Squadron Officer School, Maxwell AFB, Ala.

Air Command and Staff College, Maxwell AFB, Ala. by correspondence

Ph.D., Operations Research, Air Force Institute of Technology, Dayton, OH, 2017

Air War College, Maxwell AFB, Ala., by correspondence

Lieutenant Colonel Adam J. Messer's mission is to develop quality leaders by preparing students to become officers in the US Air Force and US Space Force while earning a college degree. Lieutenant Colonel Messer was commissioned upon graduating from the United States Air Force Academy. Lieutenant Colonel Messer's research interests lie in digital transformation, application of statistical modeling to decision making, and statistical anomaly detection. Most recently, he was the Chief Analyst at the Space Operations Command Digital Transformation Directorate, Peterson Space Force Base, Colorado. Other assignments include Headquarters Air Force Personnel Policy Analyst, Assignments Officer at the Air Force Personnel Center, and Theater Analyst at the United States Air Forces in Europe.

Capt. Ashley Olson, Assistant Professor of Aerospace Studies

B.S., Systems Engineering, United States Air Force Academy, CO, 2016

Air Force Intelligence Officer Training, Goodfellow AFB, TX, 2017

M.A., Intelligence Studies, American Military University, MD, 2021

Squadron Officers School, Maxwell AFB, AL, 2023

Capt. Olson is responsible for recruiting, training and commissioning cadets at Worcester Polytechnic Institute and eight cross town colleges. Prior to her current assignment, Capt Olson was the Key Leader

Engagements Officer in the Commander's Action Group. Her duties included syncing strategic priorities across nine directorates and fourteen federal agencies for two General Officer's international and domestic engagements. In seven years of active-duty, Capt. Olson's service has included the following assignments: Officer in Charge of Wing Intelligence, 436th Operations Support Squadron, Dover Air Force Base, Delaware (June 2017 to April 2018); Analyst, 7th AF/A2 Analysis Team, Osan Air Base, South Korea (April 2018 – October 2018); Officer in Charge of Unit Intelligence, 436th Operations Support Squadron, Dover Air Force Base, Delaware (October 2018 – May 2019); Interim Senior Intelligence Officer, 436th Air Wing, Dover Air Force Base, Delaware (May 2019 – July 2019); and Executive Officer, 436th Operations Support Squadron, Dover Air Force Base, Delaware (July 2019 – July 2020). Capt. Olson has been the recipient of the Defense Meritorious Service Medal, the Air Force Commendation Medal with oak leaf cluster, and the Joint Service Achievement Medal.

Appendix
Consent Agenda Motions

(see next page)

Date: August 31, 2023

To: WPI Faculty

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

Re: Motion to add CS/IMGD 4300: Graphics, Simulation, and Aesthetics

Motion: On behalf of the Computer Science Department and the Interactive Media and Game Development Program, the Committee on Academic Operation recommends, and I move that IMGD 4300: Graphics, Simulation, and Aesthetics, as described below, be added.

Proposed Course Description:

CS/IMGD 4300 – Graphics, Simulation, and Aesthetics (Cat. II.)

This course trains students to create accelerated simulations using Graphics Processing Unit (GPU) programming techniques, and to render the output of these simulations in aesthetically interesting ways. The aesthetic focus of the course is grounded by examining the histories of experimental animation, video synthesis, and the use of simulation in the digital arts. Students will evaluate the effectiveness of GPU-accelerated techniques for a variety of simulations and will create their own aesthetic explorations of appropriate simulations throughout the course.

Recommended Background: Students should have experience with graphics, web, or game engine programming and multimedia development. One of CS 4731 (Computer Graphics), CS 4241 (Webware), or IMGD 4000 (Technical Game Development II) should provide sufficient background for this course.

Rationale:

Currently there are two graphics programming courses at WPI, CS 4731 and CS 544, both titled “Computer Graphics” and designed for undergraduate and graduate students respectively. IMGD students need IMGD focused graphics programming courses in addition to these introductory classes to reinforce and master professional competency. This is true for IMGD B.S. students as well as IMGD B.A. students who might be considering a career in Technical Art. Outside of graphics programming, there is a general need for additional 4000-level IMGD courses that focus on the technical aspects of interactive media and game development; currently there are only two (IMGD 4000 “Technical Game Development II” and IMGD 4100 “AI for Interactive Media and Games”).

The learning goals of CS/IMGD 4200 include: (1) Students completing the course will be able to critically evaluate simulations (biological, physical, social, or ecological) to understand the applicability of GPU programming in accelerating their implementations. (2) Students completing the course will be able to implement GPU-accelerated simulations and create representations of their output by drawing on various aesthetic histories.

Impact on Distribution Requirements and Other Courses: CS/IMGD 4300 will be considered a standard 4000-level CS or IMGD course.

Resources Needed:

- Prof. Charlie Roberts has taught two sections of the experimental version of this course (IMGD/CS 420x, Graphical Simulation of Physical Systems), in AY 19—20 and 21—22, within his normal teaching load.

- Faculty Resource / Teaching Load Needs: Prof. Roberts will continue to teach this class every other year as part of his normal teaching rotation; no other impact on faculty resources is anticipated.
- Classroom large enough to hold 25 students, preferably with desktop computers so students can participate in in-class programming exercises. Previous offerings have been in Kaven Hall, but there are several other classrooms on campus that meet these requirements.
- TA/SA support: TA and SA support commensurate with the class enrollment will be required.

Implementation Date: Implementation date for this action is the 2024—2025 academic year.

APPENDIX: Previous Offerings and Assessment

An experimental version of the source, IMGD/CS 420x Graphical Simulation of Physical Systems, was offered twice (AY19-20, AY21-22). Enrollments were 15 students in AY 2019—2020 and 20 students in AY 2021—2022.

In the opinion of the instructor, students enjoyed the class and there were a variety of interesting projects that came out of it. Some students continued working with the subject material to do MQPs or MS theses with the instructor after the class concluded. The ability of students to code these simulations led to interesting ideas and explorations; for example, one student combined the used the Reaction-Diffusion equations of Alan Turing as a food source for Physarum (aka slime mold, see <https://pricey-polyester-a64.notion.site/Final-Reaction-Diffusion-and-Slime-Mold3b149ab708ec4147896364663500d1eb>). However, some students expressed surprise at some of the aesthetic content of the course. The title of the course and the course description have been changed to clarify the aesthetic content and rationale, to better inform technically-minded students that the course content is not solely technical in nature while also attracting students interested in aesthetics and generative art.

Below are the average responses for seven representative questions in summative course evaluations.

Question	Response
Q1: My overall rating of the course was:	4.8 (8 responses)
Q2: My overall rating of the instructors teaching:	4.9 (8 responses)
Q3: The educational value of the assigned work was:	4.8 (8 responses)
Q7: The amount I learned from the course was:	4.5 (8 responses)
Q8: The intellectual challenge presented by the course was:	4.2 (8 responses)
Q10: The instructor stimulated my interest in the subject matter:	4.6 (8 responses)
Q19: 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:	3.8 (8 responses)