



**WPI**

# **BS/MS Information Session Fall 2020**

## **Mechanical Engineering Department**

Prof. Yuxiang Shawn Liu (ME Graduate Program Coordinator, Interim)

Ms. Payton Wilkins (ME Graduate Program Administrator)

Prof. Jamal Yagoobi (ME Department Chair)

Oct 5, 2021



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# Overview

- ME Graduate Program and Graduate Committee
- Reasons for pursuing MS
- Advantage of BS/MS and Typical BS/MS timeline
- Degree requirements - MS and BS/MS
- How to apply
- Graduate academic advisors
- Academic Calendar, Graduate Catalog, and Course Schedules
- Canvas Site
- Tracking Sheets and Forms
- MS Thesis Option, and Graduate Research
- Financial Assistance
- Time for questions

Session will be recorded.  
Slides and recording will be  
made available.



## Students in the Mechanical Engineering Department

### Undergraduate Program

BS  
in  
Mechanical Engineering

### Graduate Programs

ME Program

MS, PhD

in  
Mechanical  
Engineering  
(ME)

MSE Program

MS, PhD

in  
Material Sciences and  
Engineering  
(MSE)

Essentially, BS/MS include two DIFFERENT programs:

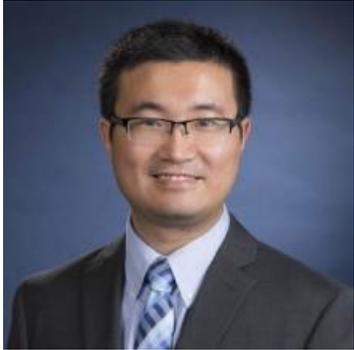
a **BS program** (in or out of ME) and a **MS program in ME**



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# ME Program Graduate Committee

Prof. Yuxiang (Shawn) Liu  
Interim Grad Committee Chair



Payton Wilkins  
ME Grad Admin



plwilkins@wpi.edu

Prof. Pratap Rao  
Grad Committee Chair  
(on Sabbatical leave;  
to return in Jan. 2022)

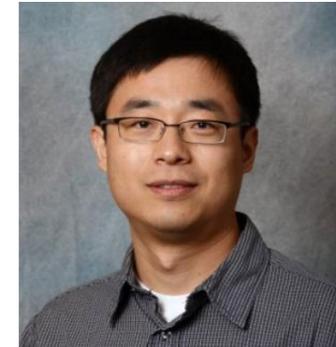


pmrao@wpi.edu

Prof. Jamal Yagoobi  
(ME Dept. Chair)



Prof. Lin  
Cheng



Prof. Zhu  
Mao



Prof. Yihao  
Zheng



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# Reasons for Pursuing MS

- Increased knowledge and expertise in more specialized area of ME
- More opportunities to do research with faculty
- Higher starting salary; more earnings over career
- MS required for many job postings

WPI Mechanical Engineering grads  
(2019)

First Destination Activity	Bachelor's	Master's
Employed	161	52
Graduate School	50	5
Military	6	0
Volunteer Service	0	0
<b>Success Rate</b>	<b>90.0%</b>	<b>95.0%</b>
Seeking Employment	24	3
Not Seeking	2	0
Unknown	5	27
<b>Total Graduates</b>	<b>248</b>	<b>87</b>
<b>Knowledge Rate</b>	<b>98.0%</b>	<b>69.0%</b>
<b>Average Salary 2019</b>	<b>\$68,229</b>	<b>\$80,820</b>



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## Advantage of BS/MS

- The BS/MS program allows students to double-count courses towards both their BS and MS degrees
- Up to 12 credits of courses taken while an undergraduate may be counted toward both the bachelor's and master's degrees
- Leaves 30 – 12 = 18 credits
- Completing both degrees in a shorter amount of time (often 5 years or less, instead of 6 years for separate BS and MS degrees)
- Complete both degrees with less cost and financial burden.



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## Typical BS/MS Timeline

- Undergraduate courses for 3 years of BS
- Both undergraduate and graduate courses in senior year of BS
- After receiving BS degree, go on to complete the remaining graduate courses needed for the MS degree, as an MS student.
- Can be comfortably completed in five years (or less!!)



# Degree Requirements MS (Non-Thesis Option)

30 graduate credits distributed as follows:

- **Mathematics requirement:** 3 graduate credits in mathematics (e.g. MA 501) or ME 5000 (2 graduate credits). ME 5001 does not satisfy this requirement.
- **18 graduate credits in mechanical engineering** if a 3-credit mathematics course is selected above, OR 19 graduate credits in mechanical engineering if 2-credit ME 5000 is selected above. These credits do not include ME 5000. These credits can include up to a maximum of 9 credits of directed research ME 598.
- **9 graduate credits of electives** within or outside of mechanical engineering. (read: max 9 credits of non-ME courses out of the total 30 credits)
- All full-time students are required to register for the **graduate seminar (ME 591)** every semester.



# Degree Requirements MS (Thesis Option)

30 graduate credits distributed as follows:

- **Mathematics requirement:** 3 graduate credits in mathematics (e.g. MA 501) or ME 5000 (2 graduate credits). ME 5001 does not satisfy this requirement.
- **9 graduate credits in mechanical engineering** if a 3-credit mathematics course is selected above, **OR 10 graduate credits in mechanical engineering** if 2-credit ME 5000 is selected above. These credits do not include ME 5000.
- **12 credits of thesis research** (ME 599) that result in a completed MS thesis
- **6 graduate credits of electives** within or outside of mechanical engineering (read: max 6 credits of non-ME courses out of the total 30 credits)
- All full-time students are required to register for the **graduate seminar (ME 591)** every semester.



# WPI Double Counting Between BS and MS

- A minimum of 6 credits and a maximum of 12 credits may be counted toward both the BS and MS degrees. The following rules apply:
- 6 credits (maximum) can be from undergraduate courses
  - None may be lower than 4000-level
  - **No extra work required in 4000-level courses**
  - Undergrad courses include both major and minor, but NO triple counting (major BS - minor BS - MS) is allowed
- Remaining courses out of the total 12 credits must be graduate courses.
  - 500 or 5000 level or higher
  - including graduate-level independent study and special topics courses
- A term-long course = 1/3 unit (undergrad) = 2 credits (grad)
- A semester-long course = 1/2 unit (undergrad) = 3 credits (grad)
- Grades of B or better are required in each double-counted course.
- There is no minimum amount of credits for double counting.
- This double counting treats some undergrad courses as grad courses, but does not override any MS requirements (Math course, # of ME courses, and max # of non-ME courses)



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## How to Apply to BS/MS 1

- Students can apply to the BS/MS program by submitting an *MS application* to WPI Graduate Admissions and selecting the *BS/MS option*:  
<https://www.wpi.edu/admissions/graduate>
- Applicants must choose either the thesis or non-thesis MS option.
- The application also includes a "Plan of Study" form that must be filled out by the applicant by listing the courses that the applicant proposes to double-count toward both his/her BS and MS degrees (see below for detailed rules).
- Students should submit their application in C term of their Junior year.
- 3 letters of recommendation are required.
- Ideally, the application (including 3 letters of recommendation) should be completed before the end of the student's junior year.
- More questions on the application process? Email [grad@wpi.edu](mailto:grad@wpi.edu). The grad admissions (not ME) administers the application process and the submission system.



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## How to Apply to BS/MS 2

In your application to the MS program, you will be asked to select a "Field of Study" or "Area of Study" within ME, which is one of the following:

- Design and Manufacturing
  - Dynamics and Controls
  - Thermal and Fluid Sciences (Fluids Engineering)
  - Structures and Materials
  - Biomechanical Engineering
- 
- This selection is just to inform the graduate admissions committee of your interests, and help us to assign advisors
  - There are no special course requirements to satisfy the field of study
  - This field of study does not appear on your degree
  - You are free to select courses that suit your interests while satisfying the degree requirements



# WPI Graduate Academic Advisors, 1

- If you are admitted into the BS/MS program, you can be assigned a *graduate* academic advisor.
- Your MS advisor is not necessarily your BS advisor – the MS program is a different one from BS.
- To view your advisor in *Workday*, please look under Academic Advising “View My Support network”. If the information is missing or incorrect please contact Ms. Payton Wilkins <plwilkins@wpi.edu>.
- Suggestions to BS/MS students: please confirm with your BS advisor whether she/he is willing to continue working with you as your MS advisor. If yes, you have one stop to ask all your questions.
- If either you or your BS advisor determines not to continue in the MS program, please contact Ms. Payton Wilkins [plwilkins@wpi.edu](mailto:plwilkins@wpi.edu) and request an MS advisor. Your email should have a subject line of “MS Advisor Request” and include in the email body your single choice of the area of study.
- We assigned advisors based on your “Field of Study”.
  - Design and Manufacturing
  - Dynamics and Controls
  - Thermal and Fluid Sciences
  - Structures and Materials
  - Biomechanical Engineering



# WPI Graduate Academic Advisors, 2

- Frequently asked questions:
  - **Is a MS advisor necessary?**
    - For non-thesis MS students, it is the student's call. An MS advisor is not necessary. The MS requirements are straightforward enough for you to decide your course plan.
    - For thesis MS students, you need a research advisor who is also your academic advisor.
  - **I am not admitted to the MS program yet, but interested. Can I get an MS advisor?**
    - No. You can request an MS advisor only after you are admitted to the MS program.
  - **My MS advisor left the school or are not available this AY. What should I do?**
    - Request another MS advisor.
  - **I do not know which area of study I should choose. Who can help?**
    - You can talk to your BS advisor to get some ideas. But, it really should be your choice rather others'. The area of study only influences the technical expertise of your advisor, not the help.



# Academic Calendar, Graduate Catalog and Course Schedules

- The WPI Academic Calendar (including the Graduate Academic Calendar) and the WPI Graduate Catalog can both be found at:

<https://www.wpi.edu/academics/calendar-catalogs>

- The Graduate Academic Calendar is the official source for term and semester dates, and holidays
- The Mechanical Engineering section of the WPI Graduate Catalog is the official source of degree requirements, course descriptions, and facilities listings
- The current and future schedule of courses (which terms and semesters which courses will be offered, and their instructors and weekly schedules) can be found at:

<https://www.wpi.edu/offices/registrar/course-registration/schedules>



# Canvas Site

The ME Graduate Program has put together a Canvas site that has all information pertaining to BS/MS and MS students in Mechanical Engineering. All the information presented today, and more, is available, including forms and Frequently Asked Questions.

This website is a great resource because:

- It has been well maintained and will be frequently updated with the latest information – much faster and more frequently than the graduate catalog.
- It contains the (almost) complete set of information you need to know about your MS.
- It is available to you 24/7.
- It saves you time writing emails to ask and waiting for replies.
- It sets up the same page of all the official information about the ME Grad Program for you, your peer students, and your advisor, removing the question of who should I listen to and trust.

**The best part:** You can self enroll in the site using the following link: <https://canvas.wpi.edu/enroll/AJCHER>



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# Tracking Sheets and Forms

- There is an important form, a BS-MS double-counting form, on the Canvas site.
  - Students in the Mechanical Engineering BS/MS program can use the form to keep track of their double-counted courses. This form can be filled out by the student and discussed with their academic advisor to make sure the plan meets the requirements of the BS/MS program before applying, and during the program.
  - However, the form should only be sent to the ME graduate coordinator (Prof. Yuxiang Liu – [yliu11@wpi.edu](mailto:yliu11@wpi.edu) in Fall 2021, or Pratap Rao - [pmrao@wpi.edu](mailto:pmrao@wpi.edu) in Spring 2022 and later) for signature and then submitted to the registrar's office, once all the courses have been completed and grades for all the courses have been filled in.
  - Do not use the registrar's BS/MS Course Designation Form – it does not make sense for the ME graduate program.
- There are also tracking sheets for the MS non-thesis and thesis degrees on the Canvas site.
  - Students should use those to plan for all the courses in the MS program. No submission is needed.
  - Note, BS and MS are two distinct programs with separate rules. Your BS tracking sheet has nothing to do with the MS one.
  - Other than double counting, MS requirements are the same for BS/MS students and for regular MS students.



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## MS Thesis Option

- Thesis option is selected during application to the program but can be selected later by notifying the ME department.
- It is up to the student to find and identify an advisor who will advise the thesis.
- Requires 12 credits of thesis research (ME 599) advised by the thesis advisor, that results in a completed MS thesis.
- Prior to completing more than 18 credits in the program, the student must form a thesis committee that consists of the thesis advisor and at least two other mechanical engineering faculty members from WPI with knowledge of the thesis topic.
- Student must prepare written thesis and defend his/her research during an oral defense, which is administered by an examining committee that consists of the thesis committee and a representative of the mechanical engineering graduate committee who is not on the thesis committee.



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# Graduate Research

- Students doing MS thesis MUST do research. Students doing non-thesis MS can also do research (a maximum of 9 credits of directed research (ME 598)).
- In either case, it is up to the student to contact potential advisors with matching interests and make arrangements to perform thesis or non-thesis research under their supervision.
- A listing of each faculty member's research areas can be found in their faculty profile at:

<https://www.wpi.edu/academics/departments/mechanical-engineering/faculty-staff>

- In addition, the names of faculty members grouped according to their area of research can be found at:

<https://www.wpi.edu/academics/departments/mechanical-engineering/research>

- These areas of research include:
  - Dynamics, Controls, and Robotics
  - Energy Science and Engineering
  - Materials and Manufacturing
  - Mechanics and Design
  - Nano and Micro Engineering
- Note that not all faculty are currently advising research



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## Financial Assistance

- The ME Department employs MS students as graders or GLAs for courses. Graders earn \$15/hour for 10 or 20 hours grading per week.
- Availability of grader positions depends on which courses are being offered and how many students are enrolled. Graders are assigned to courses before each term (graders for A term courses have already been assigned).
- Graders are usually selected if an instructor requests them specifically, or if they express interest and have taken the course and earned a good grade.
- If you are interested in a grader position, please email Payton ([plwilkins@wpi.edu](mailto:plwilkins@wpi.edu)) to let her know which course(s), and attach your unofficial WPI transcript. It would also be good to talk to the instructor of the course.
- We will sometimes send out emails asking for graders for particular courses, so you can respond then, too.
- It is also possible for you to be hired by a professor as a research assistant (RA) or as an hourly worker doing research with them. For this, you must speak directly with the professor and would be paid by that professor.
- The ME Department also offers teaching assistant (TA) positions, but these are reserved for PhD students.



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## **Time for Questions**

(the slides and recording will be sent to everyone by email after this session ends)