Biomedical Engineering
Graduate Programs at WPI

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Frequently Asked Questions…

• Should I apply to graduate school?
• What programs does WPI offer?
• Which one is right for me?
• Does BME offer a BS/MS degree?
• Can I “double count” undergrad courses?
• Can I take grad courses as an undergrad?
• When should I apply?
• What is the application procedure?
• What are my chances of admission?
• Other???
Should I apply to Graduate School?

• What are your professional goals?
  – Industry?
  – Health care profession?
  – Research?
  – Management?

• Will an advanced degree help you achieve your professional goals?
  – Needed for some positions
  – Higher salary?
  – More responsibility
  – Management opportunities

• Work experience may help you decide…
Get Work Experience NOW!!!

• Summer internships
  – Industry, NSF REU, WPI SURF
• Work part-time during the academic year
  – Work study? Earn hours in a lab.
  – Research assistant positions (UMMS, local companies)
• Volunteer part-time (or full-time summer)
  – Shadow professionals over breaks
  – Volunteer as a research assistant
  • WPI, UMass Medical School, Tufts
Benefits of Work Experience

- “Preview” job types/roles
- Do I love (or hate) research?
- Small company v. large company?
- Engineering, or other?
  - Quality assurance
  - Management
  - Marketing

- What academic credentials do I need?
Benefits of Work Experience

• Informs your decision
  – Master’s? PhD? Professional program?
  – Thesis or course-only Master’s program?
  – Which schools/programs offer what I’m interested in?

• Strengthens your application!
WPI Graduate Degrees
BME Graduate Degree Programs

• Master of Science (M.S.) – Thesis OR Project!
  – 30 credits total
  – ~ 1-2+ years beyond B.S. degree

• Master of Engineering (M.E.)
  - 33 credits total
  - Usually 1 year beyond B.S. degree

• Ph.D.
  – 90 credits, 5+ years beyond B.S. degree
  – Uncommon to admit WPI students, but we do - sometimes - with student / advisor agreement AND student meets admission criteria
# Course Requirements – Master’s

**MS (Thesis-based Master’s Degree)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BME</td>
<td>12</td>
</tr>
<tr>
<td>Electives</td>
<td>12</td>
</tr>
<tr>
<td>BME 599 (MS Thesis)</td>
<td>6</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>30</strong></td>
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**MS (Project-based Master’s Degree)**

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*In addition, the following requirements must be met for both Master of Science Degree Programs:*

- Technical Depth Requirements: 15 credits
  - Seminar (must take BME 591) pass twice

- BME Core Competencies (5):
  - mathematics
  - life science
  - clinical needs analysis
  - regulation and controls
  - value creation, innovation, technology, commercialization
# Course Requirements – Master’s

- **ME (Course-based Master’s Degree)**

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<td>BME</td>
<td>12</td>
</tr>
<tr>
<td>Life Sciences</td>
<td>3</td>
</tr>
<tr>
<td>Advanced Math</td>
<td>3</td>
</tr>
<tr>
<td>Life Sciences or Advanced Math</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>12</td>
</tr>
<tr>
<td>BME 591: Graduate Seminar (x 2)</td>
<td></td>
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</tbody>
</table>

**TOTAL:** 33 credits

**NOTE:** 1 grad credit = 1/6 unit undergrad; 2 grad credits = 1/3 unit undergrad
Which program is right for me?

• M.S. Thesis
  – Independent research could lead to publications, presentations, patents?
  – Expected to work full-time on thesis research (may not have funding)
  – Time to completion varies, can be > 2 years beyond B.S. degree (unless you start during B.S.)

• M.E.
  - Usually 1 year beyond B.S. degree, depending on course load
  - Can work full-time while completing degree (although this may take longer)
Which program is right for me?

• M.S. Project
  – Can be combined with a co-op or internship!
  – Completion based on number of credits (v. open-ended thesis research)
  – Short-term independent project
    • Design project (Research in WPI faculty lab)
    • Academic/design project related to co-op or internship
    • Clinical project
    • Continuation of MQP?
  - Usually 1 year beyond B.S. degree, depending on course load
  - Can work full-time while completing degree (although this may take longer)
Does BME offer a BS/MS degree?

• Yes!
• Similarities to other WPI BS/MS programs:
  – Up to 30% of course credits can double count
  – WPI tuition incentives apply
  – Continuous enrollment from B.S. through Master’s
• Differences:
  – Apply during senior year, NOT junior year
  – MQP advisor should write a reference for you
• Discuss plans with your Academic Advisor
Does BME offer a BS/MS degree?

- Apply for either the M.E. or M.S. program
  - B.S. + M.E. can be completed in 5 years
  - B.S. + M.S. can take 6+ years
- If applying to M.S. program, do you have a thesis/project advisor in mind?
  - Not required, but encouraged!
  - Faculty you worked with for MQP, ISP (can give you a head start on thesis research or project)
  - Doesn’t have to be CORE BME faculty – can be BME Program Faculty
  - PROJECT – can be done with a co-op or internship!
Program Expectations

• Work more independently than undergraduate
• Original research is primary focus in thesis-based graduate programs
• GPA > 3.0 to graduate
• No more than 2 C grades
• Academic Integrity
  – WPI Academic Honesty Policy
  – https://www.wpi.edu/about/policies/academic-integrity
Can I “double count” courses?

• Yes!
  – Up to 6 credits at 4000-level (~ 3 courses)
  – AND one 500-level course (~ 3 credits)
  = 9 credits “double-counted”

• BME 4300 does not count for graduate credit

• To “double-count” courses:
  – Fill out the “Course Designation Form” (download from the Registrar’s website)
  – Obtain signatures from each course instructor
  – Submit the form to the Registrar

• Additional grad courses (500-level) not needed for B.S. requirements count directly for graduate degree
Can I take grad courses as an undergrad?

• Yes! BUT…
• B.S. degree requirements should be met first!!!
  – Some graduate courses DO NOT COUNT toward B.S. degree (e.g., BME 560, BME 562)
  – DO NOT take a grad course for a Eng 3000+
  – Best to take graduate courses senior year
• Talk to your Academic Advisor!
  – Is it appropriate for me to take graduate courses?
  – How will it affect my schedule / time to graduation?
  – Only one graduate course (500-level) can count toward BME B.S. degree
How do I register for graduate courses?

• Most BME graduate courses have a limited number of seats available for undergrads
• Undergraduate students ON TRACK to fulfill B.S. requirements can register for graduate courses
• BME 562 – Laboratory Animal Surgery
  – Contact Ina Gjencaj (BMEGradProgram@wpi.edu)
  – Email your name, student number and class year
• Course descriptions in WPI Graduate Catalog
Application and Admissions
When should I apply?

• Applications due January 1, 2022
• Apply fall of your senior year
  – i.e., apply now if you wish to enroll Fall 2022
• Applications are reviewed ~ Jan 15 - May 15
• No new applications will be accepted after May 1
• BME does not admit students for Spring
  – Fall admissions only
• Other WPI departments may have slightly different deadlines and policies…
What is the application procedure?

• Apply online through WPI Graduate Admissions
  – http://www.wpi.edu/admissions/graduate.html
  – “Apply Now”

• Required materials:
  – Transcript
  – Personal statement
  – Three letters of recommendation

• Optional:
  – Employment/experience
  – Publications, presentations, etc.

• GRE scores not required

• Application fee waived for WPI students/alumni
Personal Statement

• Why are you applying to graduate school?
• Do you have any independent research or project experience? Tell us about it!
• Is there a specific faculty member you plan to work with for your M.S. thesis?
• What are your career goals/plans beyond graduate school?
• Separate statement about “why WPI”? 
Recommendation Letters

- WPI faculty, MQP advisor, internship supervisors
  - People who can tell us about your aptitude for independent research and advanced study
  - People who know you well
- WAIVE your right to access the review
  - I require it, other faculty members might, too
  - Review is likely to be more helpful, possibly more honest
- Give plenty of notice (at least two weeks, if not more)
  - Letter writer may want to meet with you or request a resume, other information
- Send a gentle reminder (if needed) before the due date
Recommendation Letters (general)

- Ask faculty who have written letters for you before – they are likely to have ready and just need to update it.
- If applying to other schools / programs (not WPI), provide application deadlines and information about how to submit:
  - Online? Email? Paper?
  - If paper, provide an addressed, stamped envelope.
  - Help us help you!
What are my chances of admission?

- Admitted M.S. and M.E. students have:
  - Strong letters of recommendation
  - Strong performance on MQP (grades, letter from MQP advisor)
  - Overall GPA > 3.2
  - ≥ “B” grades in advanced BME courses
  - At least one BME internship or research experience (internal or external)
  - Solid personal statement
Grades aren’t everything, but…

• Grades in advanced courses and MQP are indicators of your potential to succeed in graduate school
• Only courses with “B” grades or higher can “double count”
• We do not admit students w/ GPA <3.0
What can I do to improve my chances?

- Work / internship experience
- Take graduate courses as a non-matriculated student
  - Shows you can succeed in graduate courses
  - Can take up to three graduate courses (9 credits) without being enrolled
  - Courses count toward degree if/when admitted
  - Must get “B” grade or higher to transfer
  - ADMISSION TO DEGREE PROGRAM NOT GUARANTEED!!!
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PhD Programs

- Goal: conduct and direct independent research
  - Industry or academia
- MUST LOVE RESEARCH!
  - Usually requires 60+ hours/week for at least 5 years (and postdoc beyond!!!)
  - Talk to PhD students and postdocs in your lab
- Dissertation research is central!
  - Choose school with strong research focus and resources in area of interest – start with literature search
  - Multiple faculty members in this research area
- Special focus or center of excellence?
- Apply for fellowships! Can apply for some senior year.
  - NSF Graduate Research Fellowship Program
- Did I mention emphasis on independent research?
Internship Resources

• Resume
  – Create one, keep it updated, get feedback from CDC and others

• Career Development Center (CDC)
  – Career Fairs (Spring - biotech/biomed)
  – JobFinder – resume database

• Mass. Life Sciences Internship Challenge

• Search companies; visit their websites

• Independent research
  – NSF REU (Research Experience for Undergraduates)
    • Search by research topic or geographic area
    • WPI SURF, UMass Med School
      – may need faculty sponsor to apply
BME Undergraduate Advising
Canvas Site

• Graduate Program Information (left tab)
  – Slides of this presentation
  – FAQs re: BME BS/MS Program Application
  – Or, visit: wp.wpi.edu/bme/grad
Questions?

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