



# WPI

# Biomedical Engineering Graduate Programs at WPI

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# Frequently Asked Questions...

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- 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?

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- 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!!!

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- 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

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- “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?***

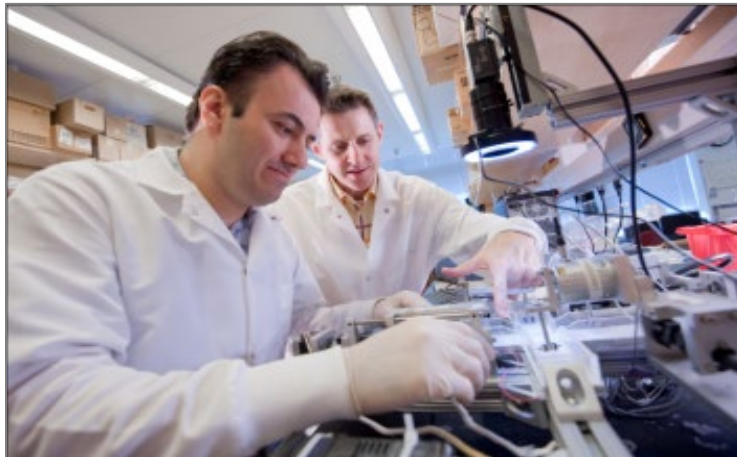
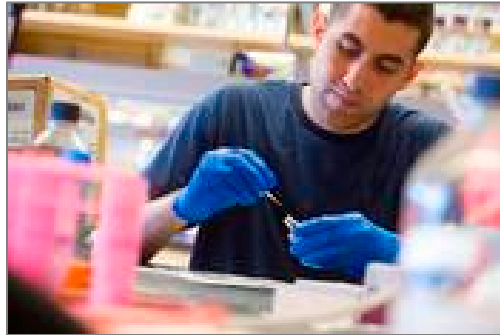
# Benefits of Work Experience

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- 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

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# BME Graduate Degree Programs

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- 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)***

BME	12 credits
Electives	12 credits
BME 599 (MS Thesis)	6 credits
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<b><i>TOTAL:</i></b>	<b><i>30 credits</i></b>

## ***MS (Project-based Master's Degree)***

BME	12 credits
Electives	12 credits
BME 597 (MS Project )	6 credits
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<b><i>TOTAL:</i></b>	<b><i>30 credits</i></b>

***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)*

BME	12 credits
Life Sciences	3 credits
Advanced Math	3 credits
Life Sciences or Advanced Math	3 credits
Electives	12 credits
BME 591: Graduate Seminar (x 2)	
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<i>TOTAL:</i>	<i>33 credits</i>

**NOTE:** 1 grad credit = 1/6 unit undergrad; 2 grad credits = 1/3 unit undergrad

# Which program is right for me?

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- **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?

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- **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?

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- 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?

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- 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?

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- 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)
  - <http://www.wpi.edu/Images/CMS/Registrar/CombinedBSMSForm.pdf>
  - 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?

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- 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?

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- 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](mailto:BMEGradProgram@wpi.edu))
  - Email your name, student number and class year
- Course descriptions in WPI Graduate Catalog

# Application and Admissions

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# When should I apply?

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- 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?

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- 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

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- 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

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- 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)

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- Ask faculty who have written letters for you before – they are likely to one 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?

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- 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
  - $\geq$  “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...

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- 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?

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- 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

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- 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

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- 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
  - <http://www.masslifesciences.com/programs/internship/>
- 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

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- Graduate Program Information (left tab)
  - Slides of this presentation
  - FAQs re: BME BS/MS Program Application
  - Or, visit: [wp.wpi.edu/bme/grad](http://wp.wpi.edu/bme/grad)

# Questions?

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