Mechanical Engineering
Freshmen Orientation

Prof. Steven Marra
Director of Undergraduate Studies

Mr. Mike Bernard
Academic Program Manager

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Today’s Orientation

Overview of Mechanical Engineering at Johns Hopkins
MechE Senior Design
Undergraduate Research
MechE Student Groups
Freshman Fall Courses
Advising Manual Quiz Challenge
Our people:
• 30 professors / lecturers
• 13 administrative, lab, and research staff
• 25 postdoctoral scholars
• 241 graduate students
• 224 undergraduate students

Our goal: To educate an exceptional group of engineers who, after graduation, will be successful and on track to become leaders among their peers in industry, government laboratories, graduate school programs, and other organizations.
Learn about the great things our faculty do on our faculty page at https://me.jhu.edu/faculty/.
Undergraduate Degrees

Two Bachelor of Science degrees
Mechanical Engineering
Engineering Mechanics

Both programs are ABET-accredited (abet.org)
Compare the Majors

• **Mechanical Engineering (B.S. M.E.)**
  - Well-specified curriculum
  - “Traditional” mechanical engineering program
  - More than 200 programs in the United States

• **Engineering Mechanics (B.S. E.M.)**
  - More flexible curriculum
  - More math and basic science
  - 10 programs in North America
# B.S. Mechanical Engineering

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit Area</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>Basic Science</td>
<td>N</td>
<td>13</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Q</td>
<td>19</td>
</tr>
<tr>
<td>Humanities/Social Sciences</td>
<td>H, S</td>
<td>18</td>
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<tr>
<td>Core Engineering</td>
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<td>50</td>
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<tr>
<td>MechE Electives</td>
<td>E</td>
<td>9</td>
</tr>
<tr>
<td>Technical Electives</td>
<td>E, N, Q</td>
<td>9</td>
</tr>
<tr>
<td>Senior Design</td>
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*Get help from...*
- Undergraduate Academic Advising Manual
- Your Faculty Advisor
- Academic Program Manager, Mike Bernard
# B.S. Engineering Mechanics

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<td>Core Engineering</td>
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<tr>
<td>Engineering Science and Engineering Mechanics</td>
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<td>15</td>
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*Academic Program Manager, Mike Bernard*
Tracks

The Mechanical Engineering Department offers tracks in ...

• **Aerospace**

• **Biomechanics**

...plus additional electives in robotics, mechanics of materials, design, thermo-fluids and thermo-fluids systems.

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Minors and Double Majors

Some minors...
- Entrepreneurship and Management - Physics
- Robotics - Mathematics
- Computer Science - Economics
- More in Engineering / Arts and Sciences

Double majoring possible, but...
- Lots of extra work and time management
- Easier with many AP credits

• Fields of Study page – engineering.jhu.edu
• Majors/Minors page – advising.jhu.edu
Senior Design

- 8 credits, full year
- Industrial Sponsor provides project, a sponsoring engineer, and funding
- Design, build, and test prototypes and final products.
- Culmination of your engineering education!

INFO...
- Prof. Nathan Scott – nscott@jhu.edu
- http://me.jhu.edu/undergraduate-studies/senior-design/
Academic Advising

- You have a faculty advisor from Mechanical Engineering.
- You also have a Whiting School advisor.
- You will meet with your MechE faculty advisor today or tomorrow.

Right now, aim your phone at this QR Code for the advisor meeting schedule:
Academic Advising

Visit your MechE advisor at least twice a semester...
  •  after three weeks, to update your status
  •  during Advising Week, to choose courses

See your MechE advisor anytime...
  •  to plan or change your course schedule
  •  to discuss requirements for your major
  •  when you have academic or performance concerns

Contact Mike Bernard...
  •  to create or update your 4-year plan
  •  for policy and administrative help.
• The responsibility for meeting with your MechE faculty advisor is yours.

• Schedule meetings with your advisor in advance – do not wait until the last moment; he or she might not be available.

Get help from...
Undergraduate Academic Advising Manual
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Research in Mechanical Engineering

- Micro/Nanoscale Science and Engineering
- Fluid Mechanics and Thermal Processes
- Mechanical Engineering in Biology and Medicine
- Mechanics and Materials
- Energy and the Environment
- Robotics
- Systems, Modeling, and Control
Undergraduate Research Opportunities

- Enrich your education with research.
- Can open more doors to career opportunities.
- Earn credits or money while doing research.
- Begin as early as freshman year.
- Primary qualification is *enthusiasm*.
- Talk to the faculty!
- Research helps you...
  - Get a hands-on, real-world feel for engineering
  - Build a working relationship with the leading scholars in the field

*Get help from...*

*MechE Top 12 – Undergraduate page*

[https://me.jhu.edu/t12/top-12-undergraduate-students/](https://me.jhu.edu/t12/top-12-undergraduate-students/)
Student Groups

- Hopkins Baja
- Design Build Fly
- AstroJays
- ASME
- VME
- SEDS
- HSWET
- BattleBots
- WoMEN

...and many more!
References and Contacts

PEOPLE

• Your MechE Faculty Advisor
• Prof. Steven Marra: marra@jhu.edu
• Mike Bernard: me-academic@jhu.edu

RESOURCES

• JHU Catalog: http://e-catalog.jhu.edu/
• “Engineering 101”
• Undergraduate Academic Advising Manual
• MechE Website: http://www.me.jhu.edu
• “Top 12” for Undergrads – http://me.jhu.edu/t12/top-12-undergraduate-students/
We'll stop here for the moment...

Questions?
Freshman MechE Courses

• 530.107 / 108 MechE Undergraduate Seminar I / II
• 530.111 Intro to MechE Design and CAD (Fall)
• 500.114 Gateway Computing - MATLAB (Spring*)
• 530.115 / 116 MechE Freshman Lab I / II
• 530.123 / 124 Intro to Mechanics I / II

Note: 530.124 is required for all ME and EM majors (regardless of AP credits)

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*Other Gateway Computing options are available
Freshman MechE Courses and AP Credits

• If you scored a 4 or 5 on the AP Physics C (Mechanics) exam, then you do not have to take *Intro to Mechanics I*.

• If you scored a 5 on the AP Computer Science exam, then you must either....
  1. Take one of the *Gateway Computing* courses and forfeit the AP credits, or
  2. Take a more advanced programming course (e.g. *Intermediate Programming, Data Structures*), which you may count as a technical elective.

➤ You will still be expected to know MATLAB regardless.
MechE Fall Freshman Courses

Most of you should already be registered for these courses:

- AS.030.101 *Introductory Chemistry I* (unless you have AP Chem credits)
- EN.530.107 *MechE Undergraduate Seminar I*
- EN.530.111 *Intro to MechE Design and CAD*
- EN.530.115 *MechE Freshman Lab I*
- EN.530.123 *Introduction to Mechanics I* (unless you have AP Physics C [Mechanics] credits)
- AS.060.100 *Intro to Expository Writing*, AS.060.113 *Expository Writing*, or AS.220.105 *Intro to Fiction and Poetry*
- A math course (likely Calculus I, II, or III)
MechE Advising Manual and Checkout Sheets

me.jhu.edu

→ UNDERGRADUATE

→ Academic Advising - Undergraduate

→ Advising Manuals

→ Checkout Sheets

→ Course Dependency Maps
MechE Advising Manual Quiz Challenge

Our winners!
Best of luck to you this freshman year!

Questions?