

# *Mechanical Engineering Freshmen Orientation*

**Prof. Steven Marra**  
**Director of Undergraduate Studies**

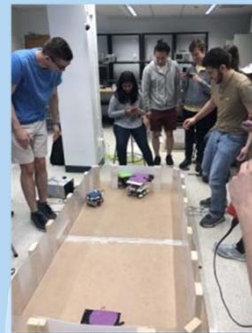
**Mr. Mike Bernard**  
**Academic Program Manager**

**August 26, 2022**



## *Today's Orientation*

- Welcome and Greetings**
- Icebreaker**
- Overview of Mechanical Engineering at Johns Hopkins**
- MechE Senior Design**
- Undergraduate Research**
- MechE Student Groups**
- Freshman Fall Courses**
- Advising Manual Quiz Challenge**



## The Department of Mechanical Engineering

### Our people:

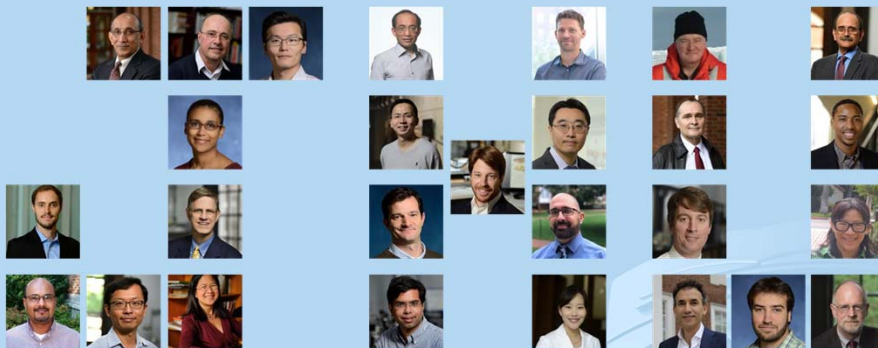
- 30 professors / lecturers
- 13 administrative, lab, and research staff
- 25 postdoctoral scholars
- 242 graduate students
- 234 undergraduate students



**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.



## Faculty



Visit the Faculty page for info at <https://me.jhu.edu/faculty/>



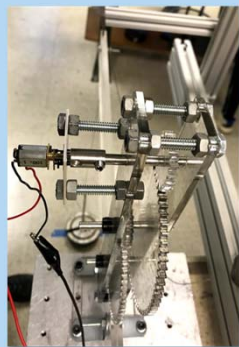
## Undergraduate Degrees

**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

Subject	Credit Area	Credits
Basic Science	N	13
Mathematics	Q	19
Humanities/Social Sciences	H, S	18
Core Engineering	E	50
MechE Electives	E	9
Technical Electives	E, N, Q	9
Senior Design	E	8



### Get help from...

Undergraduate Academic Advising Manual  
Your Faculty Advisor  
Academic Program Manager, Mike Bernard



## B.S. Engineering Mechanics

Subject	Credit Area	Credits
Basic Science	N	16
Mathematics	Q	23
Humanities/Social Sciences	H, S	18
Core Engineering	E	27
Engineering Science and Engineering Mechanics Electives	E	15
Technical Electives	E, N, Q	18
Senior Design	E	8



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## 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
- Robotics
- Computer Science
- More in Engineering / Arts and Sciences
- Physics
- Mathematics
- Economics

### Double majoring possible, but...

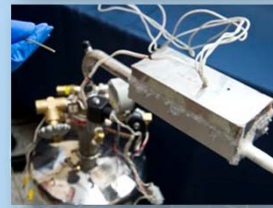
- Lots of extra work and time management
- Easier with many AP credits

- Fields of Study page – [engineering.jhu.edu](http://engineering.jhu.edu)
- Majors/Minors page – [advising.jhu.edu](http://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. Steve Belkoff– [sbelkoff@jhmi.edu](mailto:sbelkoff@jhmi.edu)
- <http://me.jhu.edu/undergraduate-studies/senior-design/>



## Academic Advising



- You have a **faculty advisor** from the Department of Mechanical Engineering.
- You also have a **Whiting School professional advisor**.
- You will meet with your MechE faculty advisor today or sometime next week.



*Access the QR Code now to find today's Advisor Meeting Schedule*





## Academic Advising

### Visit your MechE faculty advisor at least twice a semester...

- after three weeks, to update your status
- during Advising Week, to choose courses

### See your MechE faculty 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.



## Academic Advising

- 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.



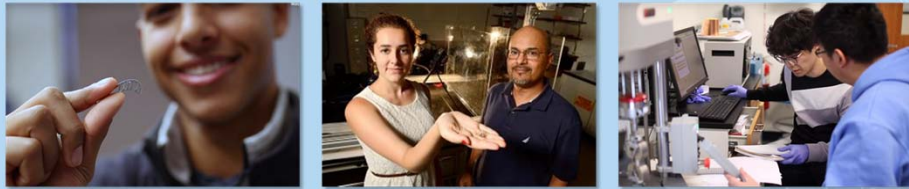
### Get help from...

- *Undergraduate Academic Advising Manual*
- *Your Faculty Advisor*
- *Academic Program Manager, Mike Bernard*



## 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 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/>





## Student Groups

- Hopkins Baja
- Design Build Fly
- AstroJays
- ASME
- VME
- SEDS
- Wind Energy
- WoMEN
- Battlebots
- Blacksmithing
- ...and many more!



## References and Contacts

### PEOPLE

- Your MechE Faculty Advisor
- Prof. Steven Marra: [marra@jhu.edu](mailto:marra@jhu.edu)
- Mike Bernard: [me-academic@jhu.edu](mailto: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/>



## 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)**

### Get help from...

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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)
- Any writing intensive course with an “H” (humanities) or “S” (social sciences course area.
- A math course (likely *Calculus I, II, or III*)



## *MechE Advising Manual and Checkout Sheets*

me.jhu.edu

↳ Education

↳ Undergraduate Studies

↳ In This Section

↳ Advising - Undergraduate

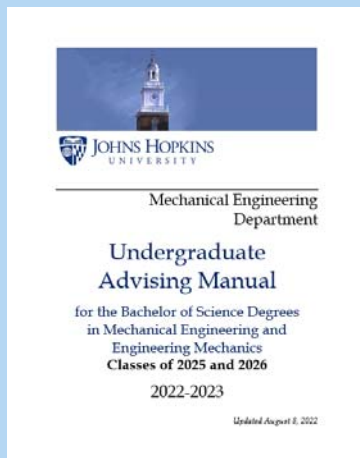
↳ Advising Manuals

↳ Checkout Sheets

↳ Course Dependency Maps



## MechE Advising Manual Quiz Challenge



**Our  
winners!**



**Best of luck to you  
this freshman year!**

Questions?

