



**MECHANICAL ENGINEERING**  
UNIVERSITY OF MICHIGAN

**UNIVERSITY OF MICHIGAN**  
**COLLEGE OF ENGINEERING**

**MECHANICAL ENGINEERING UNDERGRADUATE PROGRAM**

## U-M ME Undergraduate Program — Educating the Leaders and Best

Mechanical Engineering (ME) at The University of Michigan (U-M) hosts a top-ranked Undergraduate Program. Our engineering curriculum is built upon a strong foundation of science-based courses centered on a spine of progressive team-based practicums. This approach integrates student learning through hands-on design, manufacturing and experimental testing experiences. Our flexibility electives enable students to leverage the top-ranked programs across the University (100 programs ranked top ten nationally) to create their own unique and customized degrees.

With world-renowned faculty and facilities in traditional and new emerging areas, such as energy and environment, emerging manufacturing, future transportation, and bio/health systems, our students have unprecedented opportunities for Research, Innovation, Service and Entrepreneurship (RISE) through our RISE program as

well as multidisciplinary design, international experiences, and honors programs in the College of Engineering (CoE). ME's instructional space features dedicated design and manufacturing facilities, including mechatronic workstations, rapid prototyping and full machine shop, and high tech experimental test stations.

In 2014 we opened our new state-of-art, one-of-a-kind facility with advanced laboratories that provide ultra high quality research space. This new 46-million dollar building continues to advance U-M ME as a leader in transformative research activities and educational innovations. In addition, a 50-million dollar major renovation of the GGB Building was completed to achieve a world-class student-centric educational and instructional facility for U-M ME.



Cover image: Major renovation of ME GGB Building to achieve student-centric educational space: new state-of-the-art undergraduate lab.

## ME INTEGRATED CURRICULUM A WORLD CLASS EDUCATION

### Mechanical Engineering Core *Science-Based Series*

ME 211 Solid Mechanics  
ME 235 Thermodynamics  
ME 240 Dynamics and Vibrations  
EECS 314 Electrical Circuits  
ME 320 Fluid Mechanics  
ME 335 Heat Transfer  
ME 360 Systems and Controls  
ME 382 Engineering Materials

### Team-Based Practicum Spine *Design, Build, Test*

ENG 100 Introduction to Engineering  
ENG 101 Computers and Programming  
ME 250 Design and Manufacturing I  
ME 350 Design and Manufacturing II  
ME 395 Junior Laboratory  
ME 450 Senior Capstone Design and Manufacturing  
ME 495 Senior Laboratory

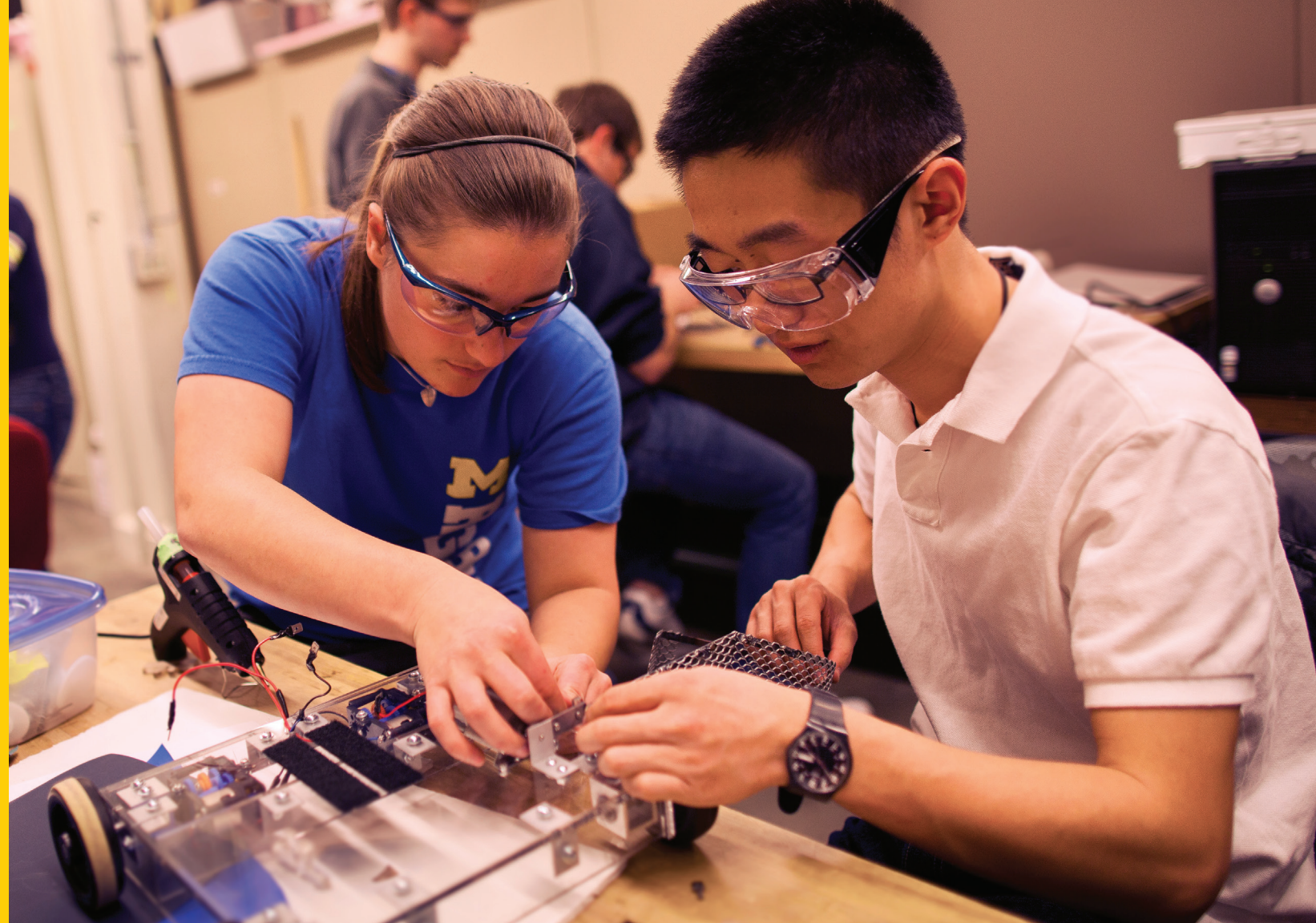
### Flexibility Electives *Individualized Customization*

General Electives  
Intellectual Breadth  
Advanced Math Electives  
Economic/Financial Electives  
Technical Electives  
Specialization Elective

## Flexibility Electives — Endless Opportunities

Mechanical Engineering at the University of Michigan offers a rare flexibility for students to pursue their own path to success. Our wide range of intellectual breadth electives across the campus supply different modes of thought and areas of human accomplishment to fully understand the impact of engineering solutions in a global, economic, environmental and societal context. Ample general electives enable students to explore, while our specialization electives provide students the ability to specialize in a topic of their choice within ME, CoE or across campus. ME has a significant number of technical electives covering all core ME disciplines as well as new thematic areas such as energy and environment, emerging manufacturing, future transportation, and bio/health systems. Examples of courses beyond traditional technical subjects are:

- Advanced Energy Solutions
- Advanced Manufacturing Processes
- Advanced Materials for Design Engineers
- Automotive Engineering
- Battery Systems and Controls
- Biofluid Mechanics
- Biomechanics
- Composites
- Engineering Acoustics
- Global Product Design and Manufacturing
- Hybrid Vehicles
- Mechanics of Human Movement
- Mechanics of Polymers
- Mechatronics
- MEMS
- Nano-Manufacturing
- Robotics
- Smart Materials and Structures
- Sustainable Design and Manufacturing
- Tissue Mechanics



## Certificates and Degrees — Extending Your Expertise

Utilizing the flexibility of their electives, students can delve progressively deeper into areas of interest across the campus to earn certificates and degrees that enhance their ME degree.

**Concentrations:** Within the undergraduate degree, the ME department offers concentrations, which allow interested students to focus their technical electives in a specific subject area, such as energy or manufacturing systems.

**Minors and Certificates:** Students looking to complement their ME degree can leverage over 111 minors and certificate programs across the University in exciting areas such as the international minor, multidisciplinary design, business and entrepreneurship, program in sustainable engineering, mathematics, physics, art & design, music, and more.

**Joint /Dual Degrees:** For students wishing to pursue joint or dual degrees, double-counting is provided with many well-established programs between all the engineering departments as well as LS&A; School of Music, Theatre & Dance; Stamps School of Art & Design and the Ross School of Business.

**SUGS:** For those driven to achieve a master's degree to top off their undergraduate degree, U-M Rackham Graduate School provides a fast track route via a 5-year Sequential Undergraduate /Graduate Studies (SUGS) program.

## RISE: Research, Innovation, Service and Entrepreneurship

Mechanical Engineering at U-M offers a broad spectrum of special programs to allow students to excel in Research, Innovation, Service and Entrepreneurship.

**Research Programs:** Students can enrich their educational experiences and prepare for graduate school through our new RISE program, which provides a series of independent study opportunities throughout the student's undergraduate career with world-renowned ME faculty in state-of-the-art laboratories. Research opportunities exist well beyond the classroom and include recognized programs such as the Undergraduate Research Opportunity Program (UROP), the Summer Undergraduate Research In Engineering (SURE) and the Summer Research Opportunities Program (SROP). For our students with extraordinary abilities, the CoE Honors Program furnishes an opportunity to achieve superior technical excellence, broaden their horizons and become global leaders.

**Multidisciplinary Design Program:** The CoE Multidisciplinary Design Program (MDP) brings students together from across the University and provides them with a chance to develop their professional and technical skills by working on real-world, multidisciplinary team-based design projects through participation in Student Competition Teams,

Faculty Research Teams, Student-led Initiatives or Industry Sponsored Projects.

**Entrepreneurship Program:** Students are able to study business methods associated with writing business plans, obtaining venture capital and other funding, intellectual property, etc – all in an effort to develop future engineering entrepreneurs.

**International Programs:** As a highly respected institution, the U-M has partnerships with universities from around the world to offer students practical overseas experiences through study, work and volunteering. One example is the U-M's award winning partnership with the Shanghai Jiao Tong University (SJTU) in China, in which we share a parallel world-class curriculum. The two universities exchange students and faculty for a culturally rich experience on both campuses. Students can volunteer for distinctive opportunities in international engineering service programs such as the Global Health Design Specialization and the BLUE Lab - a student-led organization that designs sustainable technologies to solve real world problems.



## U-M Family — A Lifelong Global Community of Learning and Engagement

While we have over 800 undergraduate students and 450 graduate students from nearly 30 countries, and a network of over 16,000 living alumni, we are a close knit family with numerous ways to make lifelong connections. We unite through sports, arts, cultural groups, student teams and service organizations as well as departmental events such as our popular Halloween Bash and MEUS (Mechanical Engineering Undergraduate Symposium). Our hometown of Ann Arbor is a vibrant cultural community with home-style and avant-garde cuisine, rich green spaces, historical movie houses, museums, delis, bookstores, concert halls, and a variety of coffee shops. Wolverine memories are made here.

It's also a place where we pride ourselves on the importance of diversity, equity and inclusion and strive to create an environment where every member of our community has a voice that is respected, a commitment to get involved and the opportunity to develop their full potential.

**Join U-M and Make Your Connection!**





## More Information

We're proud of our undergraduate program in Mechanical Engineering, and we want to tell you more about it. Our website ([me.engin.umich.edu](http://me.engin.umich.edu)) has detailed information on degree programs, financial aid, how to apply, and much more. Or call us at 734-764-0863 or email [me-aso@umich.edu](mailto:me-aso@umich.edu).

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