



The Department of Mechanical and Aerospace Engineering Undergraduate Program

www.udayton.edu/engineering/departments/mechanical_and_aerospace/undergrad_mee/

Mechanical Engineering at the University of Dayton

- The Mechanical and Aerospace Engineering Department provides cutting-edge engineering education to about 920 undergraduate and 200 graduate students. Student enrollment has doubled over the past seven years.
- In the classroom, we rely primarily upon active, project-based learning with an emphasis on design.
- Our students receive individual attention in smaller classes with an average of 35 students per class.
- Our first year retention rate is 91%.
- 79% of our students complete their Mechanical Engineering degree compared to about 38% nationally.
- Our 18 full-time faculty are nationally-recognized teacher/scholars with open-door policies and a commitment to helping students find paths to match their interests.
- U.D. Mechanical Engineering faculty have won 5 university teaching awards and 3 university scholarship awards. Last year they published 40 peer reviewed papers and conducted over \$950,000 in supported research.
- The Mechanical and Aerospace Engineering program is fully accredited by the Accreditation Board for Engineering and Technology.
- Six months after graduation, 96% of our graduates have jobs as mechanical engineers or are pursuing graduate study or military service. Average starting salary is \$59,500.

What Do Mechanical Engineers Do?

- Mechanical engineers **design things that move to improve our world.**
 - Because **design** is inherently collaborative and creative so is our approach to teaching.
 - Because there are so many **things that move** Mechanical Engineering is the broadest of all engineering disciplines, which increases your chance of finding and developing your passion.
 - Because technology is the greatest driver of change, mechanical engineers **improve our world** by making it better, safer and healthier.
- Nationwide, Mechanical Engineering is the third highest paying major for students graduating with Bachelor Degrees.
- In addition to engineering, Mechanical Engineering is excellent preparation for careers in law, medicine, business and other professions.

The University of Dayton

- The University of Dayton is a top 10 catholic university and top 100 national university dedicated to educating the whole person in the Marianist spirit of learning, leading and service to the community.
- The University of Dayton is home to about 8,500 undergraduate and 2,500 graduate students.
- Our size facilitates a diversity of courses, students and cultures while retaining an intimate and personal learning experience.
- The University of Dayton's Catholic and Marianist traditions emphasize the importance of breadth of education; engineers take 33 credit hours in humanities, arts and social sciences.
- University of Dayton graduates have

higher salaries than graduates from Xavier, Miami, Ohio State, Toledo, Cincinnati and Wright State -collegescorecard.ed.gov

- According to the Princeton Review "Students don't like UD, they love UD." Why?
 - Learning outside the classroom through service, national competitions and professional organizations makes life-long learners.
 - Community engagement in campus, local and international organizations teaches teamwork and leadership.
 - Vocation: connecting work with a vision of a better future for all people.

Our Students

- Our incoming students are exceptionally well-prepared with average ACT scores of 29, average GPAs of 3.8, and average class rank of 82%.
- 19% of our students are women compared to about 14% nationally.
- 52% of our students are from outside Ohio.

Cooperative Education and Undergraduate Research

- Cooperative Education (co-op) gives students the opportunity to rotate semesters between work and study, gaining valuable professional experience.
- Co-op is not required; however, about 75% of Mechanical Engineering students engage in co-op. Last year more than 400 Mechanical Engineering students held co-op positions.
- Students become eligible for co-op after the first term of the sophomore year. Most work 2-4 work terms and graduate in 4-1/2 years. All required courses are offered every semester so co-op students are sure to get the courses they need to graduate.
- The majority of co-op positions are within a 300 mile radius of Dayton, but some extend to other locations around the country and world.
- Average co-op wage is about \$19/hour, which is about \$9,000 per semester.
- More than 85% of sponsors rate student performance as good or excellent.
- About 10% of our undergraduate students participate in research working with faculty and UDRI scientists and engineers on funded research in biomechanics, flight, materials, energy systems and other areas.
- World class companies that recruit our co-op program include:

- General Electric	- Emerson Climate Tech
- Ford Motor Company	- Boeing
- BMW	- Cummins
- Cargill	- Ethicon
- Honda	- Parker Hannifin
- UTC Aerospace Systems	- Battelle



Design & Manufacturing Clinic

- During the senior year, students engage in an externally-sponsored capstone design experience in our renowned Design and Manufacturing Clinic.
- Student teams choose from about 50 sponsored design projects each year.
- This design experience provides students with the opportunity to take an idea from problem, to concept, to detailed design, to prototype, to test in close collaboration with project sponsors.
- More than 90% of sponsors indicate that students exceed or meet their expectations.
- Design Clinic projects result in about 5 patent disclosures each year.
- KEEN Foundation rates our senior design experience as “Best in Class in Project Based Learning of Engineering Innovation.”

Mechanical Engineering Laboratories

Students integrate theory and practice through hands-on experience in our labs:

- | | |
|------------------------------|---------------------|
| - Wind Tunnel/Jet Engine | - Flight Simulation |
| - Renewable and Clean Energy | - Mechatronics |
| - Design Innovative Machines | - ETHOS |
| - Wellness and Biomechanics | - Dynamic Systems |
| - Innovation | - Materials |
| - Thermal Fluids | - Instrumentation |



Concentrations and Minors

- Concentrations (six courses) and minors (four courses) allow students to gain expertise in a focused area.
- We offer concentrations and/or minors in:
 - Aerospace Engineering: Close relationships with the Air Force Research Laboratory, General Electric, Merlin and other aviation leaders exposes our students to world class flight simulation and wind tunnel facilities, faculty, and stimulating co-op experiences.
 - Energy Systems: Innovative course work in energy-efficiency, renewable energy and combustion coupled with hands on experience in our Renewable and Clean Energy Laboratory and research opportunities in our award-winning Industrial Assessment Center and Building Energy Center develops students who are in high demand in the green economy.
 - Biomechanics: Students combine research in the Engineering Wellness Through Biomechanics Lab with course work in anatomy, experimentation and modeling to launch careers that matter in this fast growing area.
 - Mechanical Systems: The Design of Innovative Machines Lab and world-class faculty in kinematics, machine design, controls, finite element analysis and mechatronics provide students with depth in this universally applicable field.
- Mechanical Engineering students also enroll in other minors, majors, and programs across the university including:
 - Pre-MBA
 - Entrepreneurship
 - Bioengineering
 - Physics, Music, Languages
 - Sustainable Energy and Environment
 - ROTC

Student Clubs and Organizations

- Student-run clubs and organizations provide students with the opportunity to synthesize knowledge in an area of unique interest, compete in national competitions, be part of a team and assume leadership roles. U.D. Mechanical Engineering clubs include:
 - Superhigh Mileage
 - Solar Splash
 - Design/Build/Fly
 - Aircraft Design
 - Jet Engine Flyers
 - ASHRAE
 - Society of Women Engineers
 - Society of Mechanical Engineers
 - Biomedical Engineering Society



International Study and Service

- The world is increasingly connected; students are encouraged to experience international engineering through service engineering and study abroad.
- ETHOS provides students with an intensive 6-week immersion in a developing country. Student projects include photo-voltaic solar collectors in Pakistan, village water projects in Africa, solar ovens in Latin America and high efficiency stoves in South America.
- Study Abroad allows students to earn 3 to 10 credit hours while studying engineering and international culture in Austria, Italy, Ireland and Scotland.
- U.D's China Institute in Suzhou hosts classes and entire semesters for studying engineering and experiencing Chinese culture.

Bachelors + Masters Program

- Graduate school helps students master engineering fundamentals while conducting research to create new knowledge. About 17% of our students continue to graduate school.
- An M.S. degree requires the equivalent of 10 courses, up to two of which may be thesis or research project.
- Students in the Bachelors + Masters Degree program can apply two graduate courses taken for undergraduate credit to a M.S. Degree in Mechanical Engineering, Aerospace Engineering or Renewable and Clean Energy and receive a 33% tuition discount on all courses taken during the first year of their M.S. program.



Alumni of University of Dayton Mechanical Engineering Program

- U.D. Mechanical Engineering graduates consistently rate their educational experience as better than peer programs at Notre Dame, Vanderbilt, Carnegie Mellon and Northwestern.
- Employers agree that University of Dayton engineering graduates stand out from their peers with respect to design, communication and teaming.
- Our students pursue graduate education at top universities including: Stanford, Princeton, Massachusetts Institute of Technology, Michigan, Georgia Institute of Technology, and Johns Hopkins University.
- Our students receive prestigious awards and fellowships from the National Science Foundation, Department of Energy, Society of Women Engineers, Society of Asian Scientists and Engineers, ASME, ASHRAE and others.



Dr. J. Kelly Kissock, Chairperson

Department of Mechanical and Aerospace Engineering
300 College Park
Kettering Laboratories Room 361B
Dayton, Ohio 45469-0238
937-229-2835
jkissock1@udayton.edu

Ginger Stuck, Administrative Assistant

Kettering Laboratories Room 361
937-229-2999
gstuck1@udayton.edu

- Visit our website at www.udayton.edu/engineering/departments/mechanical_and_aerospace/undergrad_mee/index.php for information on our program, faculty, and student accomplishments.