

A photograph of a large, multi-story brick building with a prominent glass-enclosed tower. The building features several tall, narrow windows and arched entryways. A paved walkway leads towards the building, and a person is visible in the distance. The foreground is dominated by a large, dense bush. The entire image has a reddish tint.

University of Dayton

UD
graduate
school

Department of Mechanical and
Aerospace Engineering
Mechanical Engineering Graduate Programs

University of Dayton Graduate School

The University of Dayton offers more than 50 disciplinary and cross-disciplinary advanced degree programs, making it easy for you to find a program to meet your needs. We are committed to student success by providing excellent advanced educational opportunities and services that link learning, research and scholarship with the Catholic and Marianist values of the University of Dayton. In the Eugene W. Kettering building, we have a number of instructional and research laboratories where we blend hands-on learning and practical experience with the best in engineering scholarship. Our graduate program is rated 52nd nationally by U.S. News and World Report (2011).

Mechanical Engineering

The Department of Mechanical and Aerospace Engineering provides a dynamic atmosphere for learning, growing, and developing well-rounded engineers, scholars, and professionals.

Mechanical and Aerospace Engineering offers an avenue for the synthesis of principles of the physical sciences, mathematics, economics, and human relations. Engineers in these areas conceive, design and analyze a wide variety of products and systems.

The department offers programs of study leading to a Master of Science (M.S.), Doctor of Engineering (D.E.) and Doctor of Philosophy (Ph.D.) in Mechanical Engineering. Research areas include:

- Combustion
- Design and manufacturing
- Energy systems
- Environmentally conscious design
- Fluid mechanics
- Fuels
- Materials
- Noise and vibration
- Solid mechanics
- Sustainable engineering
- Thermal sciences
- Tribology

For the Master of Science in Mechanical Engineering the program of study must include a minimum of 30 semester hours approved by the student's advisor, including:

1. At least twelve semester hours in mechanical engineering courses to be selected from one of the following areas of concentrations.
 - a. Thermo-Fluids
 - b. Solid Mechanics
 - c. Materials
 - d. Design and Manufacturing
2. Up to six semester hours of research as a thesis or a project. The thesis option requires both a written document and an oral defense.

3. Three semester hours of mathematics.
4. Up to nine semester hours of electives, to be chosen from current course offerings which best suit the student's requirements and approved by the student's advisor.

For a Doctor of Philosophy degree, students are required to take another 30 credit hours of course work and 30 hours of research leading to a dissertation.

Admission Requirements

If you are seeking admission to any of the graduate programs in Mechanical Engineering, you must have an undergraduate degree from an accredited program in engineering, physics, applied mathematics or other appropriate program of study. If you have a different undergraduate degree, you may be required to complete prerequisite courses. You should have at least a 3.0 cumulative grade point average (GPA) on a 4.0 scale for admission in to Masters program and 3.20 for doctoral program. You should submit the following information in addition to the online application:

- An official academic record of all previously attended colleges or universities, which must be submitted directly from the colleges or universities to the Office of Graduate Admission Processing. Hand-carried transcripts, official copies marked *Issued to Student* and unofficial copies are not acceptable.
- Three letters of recommendation from professors or employers.
- A personal statement or résumé.
- Results from the GRE are not required. However, you are welcome to submit a score in support of your application.

Applying to UD

To be considered for graduate admission, apply online at:

<http://gradadmission.udayton.edu/application/>

It's simple, fast and free. After submitting your application, check your status online (http://gradadmission.udayton.edu/application/adm_status.asp) at any point during the process to see what pieces of information, if any, you may need to submit to UD. Enhance your experience by personalizing our Web site to view information about your academic interests, learn more about faculty and research opportunities, and receive important news and updates throughout the admission process.

The UD Guide (<http://gradadmission.udayton.edu/guide/>) provides key information for graduate students covering topics such as housing and dining, parking, computer accounts, class registration, financial services and more.

Cost

The charges listed are for the 2011-12 academic year and are subject to change for the 2012-13 academic year. Visit **<http://gradadmission.udayton.edu/afford/costs.asp>** for more information.

Engineering (Master's) \$758 per credit hr.

Engineering (Ph.D.) \$862 per credit hr.

Financial Aid

Teaching and research assistantships are available through the Department and the University of Dayton Research Institute. The majority of our full-time graduate students receive a teaching or research assistantship, which provides tuition plus a stipend. To applying for an assistantship, indicate your interest for an assistantship on the online admission application.

Loans and grants are also available through the University of Dayton. You must be admitted to the University of Dayton to receive a formal financial aid award. For loan and grant consideration, you are required to submit the Free Application for Federal Student Aid (FAFSA), available from any college or the Web (<http://www.fafsa.ed.gov>). Submit this form to the processing agency and list the University of Dayton (CODE #003127) to receive the aid. Although financial aid information is processed throughout the year for graduate students, May 1 is the priority consideration deadline. It is recommended that you submit your completed FAFSA to the processing agency by May 1 for financial aid consideration for the upcoming fall, winter and summer semesters.

Other financial support includes scholarships and fellowships from organizations such as Ohio Space Grant Consortium, Clare Booth Luce Fellowship and Hans Von O'Hain Fellowship.

Faculty

Our dedicated faculty will mentor your progress as you develop your research and professional capabilities. Our faculty is nationally recognized for their academic, research and professional service contributions in their respective areas of emphasis. Graduate faculty include:

Altman, Aaron, Ph.D.,
Cranfield (England), 2001
Research: Aircraft design, low Reynolds number aerodynamics, flapping wing flight, morphing aircraft, and configurational aerodynamics.

Ballal, Dilip, Ph.D.,
Cranfield (England), 1972
Research: Gas turbine combustion and jet propulsion.

Bigelow, Kimberly, Ph.D.,
Ohio State University, 2008
Research: Biomechanics.

Camberos, Jose, Ph.D.
Stanford University, 1995
Research: Computational Electrodynamics, Theoretical and Applied Thermo-Fluid-Physics and Monte Carlo Methods

Doyle, George R., Ph.D.
University of Akron, 1973

Ervin, Jamie S., Ph.D.,
University of Michigan, 1991
Research: Aviation fuel research, multiphase flow, fluid dynamic, and heat transfer.

Hallinan, Kevin P., Ph.D.,
Johns Hopkins University, 1988
Research: Capillary flow, multiphase flow, phase change heat transfer.

Jain, Vinod K., Ph.D.,
Iowa State University, 1980
Research: machine design, materials, manufacturing, tribology and fretting fatigue.

Kashani, Reza, Ph.D.,
University of Wisconsin-Madison, 1989
Research: Power systems, power electronics, and energy conversion.

Kissock, John K., Ph.D.,
Texas A&M University, 1993
Research: Industrial, building, and renewable energy systems.

Kumar, Binod, Ph.D.
The Penn State University, 1976
Research: Fuel cell and rechargeable lithium batteries

Lafdi, Khalid, Ph.D., D.Sc.,
France, 1988 and 1991
Research: Nanocomposites processing, carbon foams, and ceramics.

Murray, Andrew P., Ph.D.,
University of California, 1996
Research: Kinematics, kinematic principles in design, mechanical systems analysis, and design.

Petrykowski, John, Ph.D.,
Illinois, 1981
Research: Fluid mechanics, mathematical methods, mechanics, and heat transfer.

Pinnell, Margaret F., Ph.D.,
University of Dayton, 1995
Research: Pedagogy, service-learning, materials, aging aircraft, composite materials.

Rumpfkeil, Markus, Ph.D.
University of Toronto, 2008
Research: Computational Fluid Dynamics

Schauer, John J., Ph.D.,
Stanford University, 1964
Research: Heat and mass transfer, advanced engineering analysis, and acoustics.

Sidhu, Sukh, Ph.D.,
University of Illinois, 1992
Research: Particulate and gaseous combustion emissions.

Zabarnick, Steven S., Ph.D.,
Energy and Environmental Engineering Division
Bldg 490, WPAFB