College of Engineering

Dean
• Harriet Nembhard

Associate Dean, Academic Programs
• Nicole M. Grosland

Interim Associate Dean, Graduate Programs and Research
• H.S. Udaykumar

Undergraduate degree: B.S.E.
Undergraduate certificates: naval science and technology; technological entrepreneurship
Graduate degrees: M.S.; Ph.D.
Graduate certificate: sustainable water development
Website: https://engineering.uiowa.edu/

Hanson Center for Communication
The Hanson Center for Communication is an endowed program that works closely with engineering faculty to create, manage, and grade writing assignments across the curriculum. In addition, the Hanson Center for Communication is home to an innovative writing center that conducts hundreds of one-on-one and team tutoring sessions each year. The center’s director and assistant director supervise professional writing consultants and peer tutors.

Writing consultants are University of Iowa graduate and doctoral students. They grade hundreds of lab reports, topical papers, and technical essays each semester. Using course-specific rubrics created by the director, they provide individualized feedback throughout the writing process. Peer tutors are undergraduate engineers who have shown exceptional promise as communicators. In addressing global concerns (organization, clarity, and relevant analysis), they help their fellow students transform rough drafts into persuasive, logical documents.

Global Engineering
Many of today’s top employers are seeking engineering graduates with global experiences and competencies who can effectively interact with colleagues and customers around the world. Successful engineers are able to communicate across cultures, work on diverse teams, and productively deal with issues and conflicts arising from difference.

University of Iowa engineering students have a variety of opportunities to study, pursue internships, or conduct research abroad. Students can enroll in credit-bearing courses in English to fulfill engineering or general education requirements or earn credits toward a minor in another discipline or world language. In addition to completing coursework abroad, engineering students can pursue experiential opportunities abroad, including global internships, conducting independent research in other countries, and volunteering. The College of Engineering and International Programs support these endeavors by offering students a variety of scholarships and financial aid.

Engineering Computer Services
Engineering Computer Services (ECS) provides information technology administration for curricular, administrative, and research computing at the College of Engineering. The college has three drop-in computer labs with 225 high-end Linux and Windows computer workstations with graphics processing unit (GPU) support, a 24-seat computer classroom, a 45-seat machine learning and virtual reality-capable computer classroom, and a 400-seat virtual computer lab with GPU support that students can access from the internet. Numerous public domain and commercial engineering applications support the full range of engineering classes. Software is regularly upgraded, and hardware is refreshed at least every four years. The college’s computer labs are open 24 hours a day, every day of the year.

Engineering Electronics Shop
The Engineering Electronics Shop (EES) is a full-service electronics facility that supports sales and service for the College of Engineering, the University, and the surrounding area. EES provides design, construction, repair, calibration, and preventive maintenance services for teaching and research laboratories. EES maintains more than 10,000 parts in stock, including electronic components, computer and office...
supplies, and lockers for rent. The shop has laser cutting/etching equipment, 3D printers, and a poster-plotting service.

**Engineering Machine Shop**

The Engineering Machine Shop (EMS) is a full-service, light manufacturing facility that supports curricular, research, and operational needs of the College of Engineering and the University. EMS provides professional design and fabrication services and gives students, staff, and faculty controlled access to a student shop that contains a variety of manufacturing equipment. The shop has a high resolution 3D scanner, commercial 3D printers, a waterjet, a full wood shop, welding, and multi-axis CNC machines.

**Lichtenberger Engineering Library**

The Lichtenberger Engineering Library is a branch of the University of Iowa Main Library and is a center of engineering college activity. Its collections include more than 140,000 volumes and electronic full-text access to over 5,000 engineering and scientific journals. It offers electronic access to primary engineering and scientific indexes and abstracts, and full-text access to standards and U.S. patents. The library also maintains a substantial collection of publications from major engineering societies and a collection of national and international standards.

Tools also are available for check out to students and faculty in order to allow for more hands-on projects and use in class assignments. Example tools include screwdrivers, scales, and light meters. The library provides 35 computer workstations with specialized software packages and a significant amount of study space for students. Study spaces allow for individual as well as group study. The library features individual study carrels, group tables, lounge chairs, a collaborative work station, and movable whiteboards. Library personnel are available to assist with specialized engineering-related reference and informational questions. Personnel also provide course- and topic-specific instructional programs to further critical thinking and lifelong learning skills.

**NEXUS**

NEXUS is an art and engineering program. NEXUS promotes collaboration efforts between the College of Engineering and the art community by getting people and ideas together. The goal is to involve students in science, technology, engineering, arts, and mathematics (STEAM) projects throughout the University and the surrounding community. The program helps participants to think outside the box.

**College of Engineering Research Centers**

**Center for Bioinformatics and Computational Biology**

The Center for Bioinformatics and Computational Biology (CBCB) is a multidisciplinary research center dedicated to applying high performance networking and computing to basic life science and applied biomedical research. With faculty and students representing more than 20 traditional disciplines, the CBCB has contributed to the understanding of inherited human diseases, including blinding eye disease, cancer, deafness, diabetes, autism, schizophrenia, hypertension, obesity, and heart disease. For almost 20 years, the CBCB has been at the cutting edge of high throughput molecular discovery and interpretation in transcriptomics, genomics, and proteomics. At the confluence of these efforts lies the current wavefront of personalized genomic medicine, in which the CBCB plays a central role in partnership with labs, centers, and institutes across the University’s Carver College of Medicine and basic science programs across campus. The CBCB also has been a center for industry start-ups and partnerships with numerous commercial enterprises. The center is jointly sponsored by the College of Engineering and the Carver College of Medicine.

**Iowa Institute for Biomedical Imaging**

The Iowa Institute for Biomedical Imaging (IIBI) conducts research in the following areas: medical imaging (CT, MR, OCT, PET, SPECT, ultrasound, multimodality imaging), medical image analysis and computer-aided diagnosis; cardiovascular image analysis (angiography-intravascular ultrasound data fusion, MR image analysis of congenital heart disease, coronary CT image analysis, early detection of cardiovascular disease); pulmonary image analysis (CT and MR image analysis of the lung); cell image analysis (cell tracking, shape analysis); virtual surgery planning (augmented reality for surgical planning); cancer-related assessment of tumor progression/regression, staging, general machine learning; and disease/treatment outcome prediction. The institute is sponsored by the College of Engineering and the Carver College of Medicine.

**IIHR—Hydroscience & Engineering**

IIHR—Hydroscience & Engineering is a world-renowned center with more than 100 years of education, research, and public service focusing on hydraulic engineering and fluid mechanics. Based in the C. Maxwell Stanley Hydraulics Laboratory, a five-story red brick building on the banks of the Iowa River, IIHR is a unit of the College of Engineering. IIHR students, faculty members, research engineers and scientists, and staff work together to understand and manage one of the world’s greatest resources—water. Students from around the world benefit from IIHR’s comprehensive multidisciplinary approach, which includes basic fluid mechanics, laboratory experimentation, and computational approaches.

IIHR research activities include fluid dynamics (turbulent flows, vortex dynamics, ship hydrodynamics, biological fluid flow, atmospheric boundary layer, experimental and computational fluid dynamics); environmental hydraulics (river mechanics, hydraulic structures, fish passage, sediment management, heat disposal in water bodies and power productions, bioremediation of groundwater, computational hydraulics, water-quality monitoring); and air and water resources (air pollution, hydroclimatology, hydrogeology, hydrology, hydrometeorology, remote sensing, water resources and basin-scale processes); environmental engineering and science (PCBs in the air and water, innovative ways of removing contaminants from the soil and water, ultra-fine particles of pollutants in the atmosphere, bioremediation strategies for persistent groundwater contaminants); and water sustainability (development of sound strategies and technological solutions to meet the challenges facing society’s growing need for water resources). In 2009, the Iowa Flood Center was founded at IIHR as the only academic center devoted solely to flood-related research and education.

The University of Iowa’s Water Sustainability Initiative (WSI) brought new interdisciplinary expertise to the institute in 2013 when WSI faculty members (based in the Colleges of Liberal Arts and Sciences, Engineering, and Public Health) affiliated with IIHR. The Iowa Geological Survey joined IIHR in 2014, bringing new expertise in Iowa’s subsurface resources,
Students gain hands-on experience through close cooperation with faculty and staff on research projects funded by industry, government, and other organizations.

**Iowa Technology Institute**

The Iowa Technology Institute (ITI) conducts basic and applied research. The mission is to cultivate collaboration across disciplines, invent advanced technologies, and conduct trailblazing research in design, simulation, and experimentation that enables a safer and more productive future. ITI provides a unique environment for research and development for faculty, graduate and undergraduate students, research fellows, and professional scientists.

ITI spans more than 20 laboratories and centers, led by the Operator Performance Laboratory, the Virtual Soldier Research Program, and the Atmospheric and Environmental Research Lab.

Research at ITI focuses on advanced manufacturing and materials, human modeling and simulation, aerospace technology, biotechnology, environment and energy, and systems and sensors. Scientists conduct experiments in flight testing, human performance, robotics, biomedical and biochemical research, machine learning, smart sensors, remote sensing, renewable energy, and modeling of environmental change.

ITI has a satellite office in Orlando, Florida, and has major contracts with the U.S. military and industry partners.