Frank Batten College of Engineering and Technology

Web Site: http://www.odu.edu/eng (http://www.odu.edu/eng/)

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Mission Statement

In accordance with the mission of Old Dominion University, the Frank Batten College of Engineering and Technology promotes the advancement of engineering knowledge, both by its creation and dissemination and by providing successful graduates and a continuously improving learning environment to its constituents, while maintaining ethical, multicultural and global standards.

Overview

The Frank Batten College of Engineering and Technology at Old Dominion University offers degrees in engineering and engineering technology.

The graduate engineering programs at Old Dominion University are specifically designed to take advantage of and enhance unique assets in the Hampton Roads area, a complex of seven major cities. These assets include: 1) a strong military presence with multiple high technology facilities, particularly as it relates to modeling and simulation; 2) the NASA Langley Research Center with its focus on aeronautics and space exploration; 3) the Jefferson Laboratories, a major center of nuclear physics and home of a major Free Electron Laser; 4) one of the major international deep-water ports on the east coast of the United States; 5) a major ship building and ship repair industry, including Newport News Shipbuilding, the only builder of nuclear aircraft carriers in the U.S.; 6) a major high technology industry base; and 7) a variety of commercial enterprises. These assets have enabled the development of distinctive engineering curricula.

Master’s Programs

The Batten College of Engineering and Technology grants the following master’s degrees: Master of Science in Engineering, Master of Engineering, Master of Science in Engineering Management, and Master of Engineering Management. The programs of study leading to the master’s degree are listed avo. Interested students should refer to the individual program section of this catalog for admission information and degree requirements.

Linked Bachelor's/Master's Degree Programs

These are designed to allow qualified students to secure a space in a master's program available in the Frank Batten College of Engineering and Technology while they are still pursuing their undergraduate degrees. An eligible student can choose a master's program in the same discipline as his/her bachelor's program or in a complementary discipline. Subject to the approval of the undergraduate and graduate program directors, a student enrolled in a linked program can count up to six credit hours of course work towards both the undergraduate and the graduate degrees. Full-time students may be able to complete the requirements for the bachelor's degree in four years and the master's degree in one additional year. Students in linked programs must earn a minimum of 150 credit hours (120 discrete credit hours for the undergraduate degree and 30 discrete credit hours for the graduate degree).

Students who are matriculated in an undergraduate major in the Frank Batten College of Engineering and Technology with a GPA of at least 3.00 overall and 3.00 in the major are eligible to apply for admission to a linked bachelor's/master's program. Transfer students who desire to be admitted to a linked program at the time they join an undergraduate major at Old Dominion University are eligible to apply if their overall GPA at their previous institution is 3.25 or higher. Prerequisite courses may be required for engineering technology majors to pursue a master's degree in engineering.

Continuance in a linked bachelor's/master's program requires maintenance of a GPA of 3.00 or higher overall and in the major.

Bachelor-to-PhD Programs

For a select number of exceptionally well-qualified students, the college has established a linked doctoral program that enables students to be admitted directly into the PhD program upon completion of the baccalaureate degree. A select number of exceptionally well-qualified students can be admitted to the Bachelor/PhD program in their junior year while they are pursuing one of the undergraduate programs at Old Dominion University. This program encourages admitted students to work closely with faculty members and pursue a research experience. Just as in the linked Bachelor/MS program, six credit hours of graduate course work may again be counted towards the undergraduate degree and doctoral course work mentioned above for the Bachelor/PhD program. For linked bachelor's to doctoral programs, students must earn a minimum of 198 credit hours (120 discrete credit hours for the undergraduate degree and 78 discrete credit hours for the graduate degree). Students in these programs must maintain a GPA of 3.50 or better throughout their bachelor's and doctoral studies.

The student may opt to obtain the master's degree along the way to the doctorate. To obtain the master's degree, the student must utilize the six graduate credits obtained as part of their undergraduate program, use 18 credits of the graduate course work that is part of the PhD, and work with the Graduate Program Director to plan the final 6 credits.

Doctor of Philosophy (Ph.D.) Programs

The Batten College of Engineering and Technology grants the Doctor of Philosophy degree in Engineering. The programs of study leading to the Ph.D. degree are listed in Table 1. All Ph.D. programs require a minimum of 24 credit hours of dissertation research and 24 credits of coursework beyond an MS degree. Three-fifths of these courses (15 credit hours) must be completed at the 800 level. Interested students should refer to the individual program section of this catalog for admission information and additional degree requirements.

Interdisciplinary Graduate Certificate Programs

The college has established several certificate programs that enable students to specialize in technical areas of current interest to industry, government and academia. Both non-degree and degree-seeking students can enroll in the certificate programs. The programs provide the opportunity for practicing engineers to further their knowledge and become more competent in their profession.

Departments

- Department of Civil and Environmental Engineering (http://catalog.odu.edu/graduate/engineering-technology/civil-environmental-engineering/)
- Department of Electrical and Computer Engineering (http://catalog.odu.edu/graduate/engineering-technology/electrical-computer-engineering/)
- Department of Engineering Management and Systems Engineering (http://catalog.odu.edu/graduate/engineering-technology/engineering-management-systems/)
- Department of Mechanical and Aerospace Engineering (http://catalog.odu.edu/graduate/engineering-technology/mechanical-aerospace-engineering/)

Programs

Doctor of Engineering Programs

- Engineering with a Concentration in Cybersecurity (DEng) (http://catalog.odu.edu/graduate/engineering-technology/electrical-computer-engineering/engineering-cybersecurity-deng/)
- Engineering with a Concentration in Electrical and Computer Engineering (DEng) (http://catalog.odu.edu/graduate/engineering-technology/electrical-computer-engineering/engineering-electrical-computer-deng/)
- Engineering with a Concentration in Engineering Management and Systems Engineering (DEng) (http://catalog.odu.edu/graduate/engineering-technology/engineering-management-systems/engineering-management-systems-deng/)
- Engineering with a Concentration in Modeling and Simulation (DEng) (http://catalog.odu.edu/graduate/engineering-technology/electrical-computer-engineering/engineering-modeling-simulation-deng/)

Doctor of Philosophy Programs

- Engineering with a Concentration in Aerospace Engineering (PhD) (http://catalog.odu.edu/graduate/engineering-technology/mechanical-aerospace-engineering/engineering-aerospace-phd/)
- Engineering with a Concentration in Biomedical Engineering (PhD) (http://catalog.odu.edu/graduate/engineering-technology/electrical-computer-engineering/engineering-biomedical-phd/)
- Engineering with a Concentration in Civil and Environmental Engineering (PhD) (http://catalog.odu.edu/graduate/engineering-technology/civil-environmental-engineering/engineering-civil-environmental-phd/)
- Engineering with a Concentration in Electrical and Computer Engineering (PhD) (http://catalog.odu.edu/graduate/engineering-technology/electrical-computer-engineering/engineering-electrical-computer-phd/)
- Engineering with a Concentration in Engineering Management and Systems Engineering (PhD) (http://catalog.odu.edu/graduate/engineering-technology/engineering-management-systems/engineering-management-systems-phd/)
- Engineering with a Concentration in Mechanical Engineering (PhD) (http://catalog.odu.edu/graduate/engineering-technology/mechanical-aerospace-engineering/engineering-mechanical-phd/)
- Engineering with a Concentration in Modeling and Simulation Engineering (PhD) (http://catalog.odu.edu/graduate/engineering-technology/electrical-computer-engineering/engineering-modeling-simulation-phd/)

Master of Engineering Programs

- Engineering with a Concentration in Aerospace Engineering (ME) (http://catalog.odu.edu/graduate/engineering-technology/mechanical-aerospace-engineering/engineering-aerospace-me/)
- Engineering with a Concentration in Biomedical Engineering (ME) (http://catalog.odu.edu/graduate/engineering-technology/electrical-computer-engineering/engineering-biomedical-me/)
- Engineering with a Concentration in Mechanical Engineering (ME) (http://catalog.odu.edu/graduate/engineering-technology/mechanical-aerospace-engineering/engineering-mechanical-me/)
- Engineering with a Concentration in Systems Engineering (ME) (http://catalog.odu.edu/graduate/engineering-technology/engineering-management-systems/engineering-systems-me/)

Master of Engineering Management Program

- Engineering Management (MEM) (http://catalog.odu.edu/graduate/engineering-technology/engineering-management-systems/engineering-management-mem/)

Master of Science Programs

- Engineering Management (MS) (http://catalog.odu.edu/graduate/engineering-technology/engineering-management-systems/engineering-management-ms/)
- Engineering with a Concentration in Aerospace Engineering (MS) (http://catalog.odu.edu/graduate/engineering-technology/mechanical-aerospace-engineering/engineering-aerospace-ms/)
- Engineering with a Concentration in Biomedical Engineering (MS) (http://catalog.odu.edu/graduate/engineering-technology/electrical-computer-engineering/engineering-biomedical-ms/)
- Engineering with a Concentration in Civil Engineering (MS) (http://catalog.odu.edu/graduate/engineering-technology/civil-environmental-engineering/engineering-civil-ms/)
- Engineering with a Concentration in Electrical and Computer Engineering (MS) (http://catalog.odu.edu/graduate/engineering-technology/electrical-computer-engineering/engineering-electrical-computer-ms/)
- Engineering with a Concentration in Environmental Engineering (MS) (http://catalog.odu.edu/graduate/engineering-technology/civil-environmental-engineering/engineering-environmental-ms/)
- Engineering with a Concentration in Mechanical Engineering (MS) (http://catalog.odu.edu/graduate/engineering-technology/mechanical-aerospace-engineering/engineering-mechanical-ms/)
- Engineering with a Concentration in Modeling and Simulation (MS) (http://catalog.odu.edu/graduate/engineering-technology/electrical-computer-engineering/engineering-modeling-simulation-ms/)

Certificate Programs

- Advanced Engineering with a Concentration in Biomedical Engineering Certificate (http://catalog.odu.edu/graduate/engineering-technology/programs/advanced-engineering-biomedical-certificate/)
- Advanced Engineering with a Concentration in Cyber Systems Security Certificate (http://catalog.odu.edu/graduate/engineering-technology/programs/advanced-engineering-cyber-systems-security-certificate/)
- Advanced Engineering with a Concentration in Energy Systems Certificate (http://catalog.odu.edu/graduate/engineering-technology/programs/advanced-engineering-energy-systems-certificate/)
- Coastal Engineering Certificate (http://catalog.odu.edu/graduate/engineering-technology/programs/coastal-engineering-certificate/)
- Engineering Management Certificate (http://catalog.odu.edu/graduate/engineering-technology/programs/engineering-management-certificate/)
- Entrepreneurship and Innovation for Engineers Certificate (http://catalog.odu.edu/graduate/engineering-technology/programs/entrepreneurship-innovation-engineers-certificate/)
- Mission Analysis and Engineering Certificate (http://catalog.odu.edu/graduate/engineering-technology/programs/mission-analysis-engineering-certificate/)
- Modeling and Simulation - Engineering Certificate (http://catalog.odu.edu/graduate/engineering-technology/electrical-computer-engineering/modeling-simulation-engineering-certificate/)
- Naval Architecture and Marine Engineering Certificate (http://catalog.odu.edu/graduate/engineering-technology/mechanical-aerospace-engineering/naval-architecture-marine-engineering-certificate/)
- Project Management Certificate (http://catalog.odu.edu/graduate/engineering-technology/programs/project-management-certificate/)

Collaborative Programs

Cardinal Education (Formerly known as the Commonwealth Graduate Engineering Program - CGEP)

Jeffrey Lacombe, Associate Dean for Undergraduate and Graduate Studies, ODU Site Director

The Commonwealth Graduate Engineering Program (CGEP) is a unique cooperative agreement. This agreement is among the five largest engineering schools in the Commonwealth of Virginia: Old Dominion University, George Mason University, the University of Virginia, Virginia Commonwealth University and Virginia Polytechnic Institute and State University. The program developed in response to the diverse continuing education needs of engineering graduates working in industry and government.

Graduate engineering courses leading to a Master of Science or Master of Engineering degree or nanotechnology certificate are offered through these universities via a statewide interactive distance-learning network.

Students seeking admission to the various degree programs should request and process their applications through the Commonwealth Graduate Engineering Program Office in the Batten College of Engineering and Technology at Old Dominion University: https://www.odu.edu/eng/programs/cgep (https://www.odu.edu/eng/programs/cgep/).

Enterprise Centers

The Batten College of Engineering and Technology is a catalyst for the economic development of Hampton Roads. To this end, the college has established a number of centers to serve as engines for enterprise development. These centers utilize all University resources, including students and faculty. The former engineering centers now elevated as University Centers are: VMASC and Bioelectrics. One that has been transferred to the Commonwealth is MARS.

Applied Research Center (ARC)

Hani Elsayed-Ali, Director

ARC is an advanced materials engineering and laser technology research center. Staffed with industry/university teams utilizing the Jefferson Lab technologies, ARC provides commercial product-related research in the areas of thin film technology, laser and plasma processing of materials, materials analysis, and devices and sensor fabrication. For more information: www.eng.odu.edu/arc (http://www.eng.odu.edu/arc/).

National Center for System of Systems Engineering (NCSOSE)

Charles Keating, Director

NCSOSE is a collection of independent, nonprofit, engineering research and application organizations, government entities, and universities that have joined together with a common goal to solve problems, develop technologies, and direct research focused on critical issues related to the integration of complex systems of systems.

Affiliated Centers

Frank Reidy Research Center for Bioelectrics

Andrei Pakhomov, Interim Executive Director

The mission of the Center is to increase scientific knowledge and understanding of the interaction of electromagnetic fields and ionized gases with biological cells and to apply this knowledge to the development of medical diagnostics, therapeutics, and environmental contamination. The objectives of the Center are to perform leading edge interdisciplinary and multi-institutional research, recruit top faculty and exceptional graduate students, support regional, national, and international programs, and increase external funding and institutional visibility. For more information: www.odu.edu/bioelectrics/ (http://www.odu.edu/engr/bioelectrics/).

Center for Bioelectronics

Gymama Slaughter, Executive Director

The mission of the Center is to lead the effort of advancing scientific frontiers, ensuring educational accessibility for underrepresented students in STEM, and securing research leadership in critical areas, such as smart health and biomedical research. The ODU Center for Bioelectronics is dedicated to the mission of diversity, equity, and inclusion in education and the workforce. For more information: odu.edu/cbe.

Virginia Modeling, Analysis, and Simulation Center (VMASC)

Eric Weisel, Associate Vice President for Applied Research and Executive Director, VMASC

The Virginia Modeling, Analysis, and Simulation Center (VMASC) is an enterprise center of Old Dominion University (ODU), supporting the University's research mission through innovation, workforce development, and industry ecosystem engagement programs that create and integrate digital technologies into everyday practice—we perform applied research leading to digital transformation. For more information: www.vmasc.org (http://www.vmasc.org/).

Departmental Institutes

Coastal Engineering Institute

Director: Gangfeng Ma

Coastal Engineering is part of the college's Department of Civil and Environmental Engineering. Its mission is to foster interdisciplinary educational and research opportunities for faculty and students interested in applied coastal science and engineering.

Plasma Engineering and Medicine Institute

Director: Mounir Laroussi

Plasma Engineering and Medicine Institute is focused on conducting fundamental and applied investigations using Laser and Plasma Technologies. It offers state-of-the-art equipment and a vibrant academic environment where faculty, graduate and undergraduate students engage together in advanced research encompassing fundamental and applied research aspects in the field of cold plasmas, and its applications in engineering and medicine.

Sustainable Development Institute

Director: Mujde Erten-Unal

Sustainable Development Institute promotes and provides engineering, ecological, environmental, and economic assistance to local, regional, and national governmental agencies, as well as international organizations and businesses. The institute actively participates in community service by conducting waste minimization and pollution prevention assistance to local businesses.

Transportation Research Institute

Director: Mecit Cetin

Transportation Research Institute collaborates with centers and departments across the ODU campus to conduct innovation-based research in the core areas of transportation operations, transportation safety, transportation planning, freight transportation, and environment, energy, and sustainable transport.

Virginia Institute for Photovoltaics

Director: Sylvain Marsillac

Virginia Institute for Photovoltaics' research spans from the Nanoscale (Fundamental Sciences and Engineering) through the Devices and balance of systems, to the deployment of Gigascale commercial power generation. The current focus is to research and develop the Science and Engineering of Photovoltaic Devices (or Solar cells) and bring them from the laboratory to the industry.

Virginia Institute for Vision Analysis

Director: Khan Iftekharuddin

Virginia Institute for Vision Analysis aims to leverage complimentary expertise of faculty in computer vision, signal/image processing and machine learning to become one of the leading institute in the field.

Research focuses on novel theory, state-of-the-art algorithms, architectures, real-time implementations for biomedical engineering, human- and machine-centric recognition, environmental, and geoscience applications and computer-aided medical diagnosis systems.