

# UF Engineering Majors

## **Aerospace Engineering**

Aerospace engineers solve exciting problems of design, construction and operation of aircraft and spacecraft to meet the ever-increasing requirement for improved performance at lower unit cost. These challenges mean that aerospace engineers work at the continuously changing forefront of science, technology and systems management. Aerospace engineering studies may focus on aeronautics or astronautics and involve studies at the forefront of science, technology, and systems management associated with aircraft and spacecraft. <http://www.mae.ufl.edu>

## **Biological Engineering**

Biological Engineering links engineering with life sciences to produce food, feed, fuel, fiber and other products from renewable bio-resources. Biological Engineers design agricultural machinery, equipment, sensors, processes and structures, and they develop ways to conserve soil and water and to improve the processing of agricultural products. They often work in research and development, production, sales or management. <http://www.abe.ufl.edu>

## **Biomedical Engineering**

Biomedical engineers use traditional engineering expertise to analyze and solve problems in biology and medicine, providing an overall enhancement of health care. They may be called upon in a wide range of capacities: to design instruments, devices, and software, to bring together knowledge from many technical sources to develop new procedure or to conduct research needed to solve clinical problems. <http://www.bme.ufl.edu>

## **Chemical Engineering**

Chemical engineers are concerned with all the physical, chemical and biological changes of matter that can produce an economic product or result that is useful to mankind. They are extremely versatile and capable of working in a variety of industries: chemical, biochemical, petroleum, materials, microelectronics, environmental, food processing, consulting and project management. <http://www.che.ufl.edu>

## **Civil Engineering**

Civil engineering is the oldest and most diverse branch of engineering. In its broadest sense, the civil engineer adapts the physical features of the earth to the needs of society. Civil engineering includes the design and construction of bridges, buildings, dams, waterways, coastal protection works, airports, pipelines, space launching facilities, railroads, highways, sanitary systems, ocean structures and facilities, foundations, harbors, waterworks and many other systems and structures upon which modern civilization depends. <http://www.ce.ufl.edu>

## **Computer Engineering**

Computer engineers are able to design a complete computer system from its circuits to the algorithms that run on it. Although one can consider hardware and software separately, a computer engineer must take a more holistic approach. Students can specialize in computer systems, computer communications, networking, computer vision, embedded systems, pattern recognition, expert systems, multi-media systems or other areas. <http://www.cise.ufl.edu>

## **Computer Science**

Computer science combines a strong engineering-oriented technical basis with a flexible interdisciplinary component and an emphasis on communication skills. This flexibility will be increasingly important in the future as computers become more important tools in an ever-increasing number of disciplines. <http://www.cise.ufl.edu> **INNOVATION ACADEMY MAJOR**

## **Digital Arts & Sciences**

Digital Arts and Sciences crosses boundaries between engineering and fine arts. The degree is a core computer science degree with special emphasis on human-centered computing, which includes art, design and computing courses that are related to digital media, interaction and communication. Students will be well versed in issues and solutions for basic art techniques and graphic art design as well as modeling 3D virtual worlds. <http://www.cise.ufl.edu> **INNOVATION ACADEMY MAJOR**

## **Electrical Engineering**

Electrical engineering is concerned with all phases and development of the transmission and utilization of electric energy and intelligence. From communication systems to electronic components that run computers and motor vehicles, electrical engineers design products and systems that meet the needs of today and tomorrow's electrical and electronic systems. <http://www.ece.ufl.edu>

## UF Engineering Majors

### Environmental Engineering

Environmental engineering applies engineering and scientific principles to protect and preserve human health and the environment. It embraces broad environmental concerns, including air and water quality, solid and hazardous wastes, groundwater protection and remediation, water resources and management, environment policy, radiological health, environmental biology and chemistry, systems ecology, water and wastewater treatment and wetlands ecology. [www.ees.ufl.edu](http://www.ees.ufl.edu)

### Industrial & Systems Engineering

Industrial and Systems engineering deals with the optimization of complex processes or systems. It typically focuses on the development, improvement, implementation and evaluation of integrated systems of people, money, knowledge, information, equipment, energy and/or materials. Industrial and Systems engineering prepares students for industrial practice in product design, process design, plant operation, production control, quality control, facilities planning, work system analysis and evaluation, and economic analysis of operational systems. [www.ise.ufl.edu](http://www.ise.ufl.edu)

### Materials Science & Engineering

Everything Americans use is composed of materials, from computer chips to flexible concrete skyscrapers, from plastic bags to artificial hips, from fiber optical cables to automobiles. Materials science and engineering makes these materials reliable and useful through design, processing and analysis of controlled compositions, microstructures and properties. This degree provides a broad materials science and engineering core with specialization in ceramics, electronic materials, metals or polymeric and biomaterials. [www.mse.ufl.edu](http://www.mse.ufl.edu)

### Mechanical Engineering

Mechanical Engineering is broad in scope, encompassing design and analysis of vehicles, robotics, machinery, thermal and fluid engineering, and energy. Mechanical engineers may also focus on vehicle design and power such as ships, trains, automobiles, and space vehicles. The design of intelligent machines and robots as well as the gears, cams, bearings, and couplings that facilitate and control all kinds of mechanical motion are an integral part of mechanical engineering. [www.mae.ufl.edu](http://www.mae.ufl.edu)

### Nuclear Engineering

Nuclear engineering includes the use of radiation in medicine for treatment and diagnostics; design, development and operation of nuclear power systems; numeric simulation of nuclear systems; health physics and radiation protection; biomedical engineering and radiation imaging; nondestructive examination of materials and structures using radiation techniques; nuclear energy for space power and propulsion; and using radiation in food processing, industrial processing and manufacturing control. [www.nuceng.ufl.edu](http://www.nuceng.ufl.edu)

### Exploratory Engineering

Students who want to major in engineering but have not yet chosen a specific discipline should choose this major. The College of Engineering offers many services to help students decide on their major including Introduction to Engineering (EGS1006), Exploratory workshops and intensive academic advising. Also, students who need to take both Introduction to Chemistry (CHM1025) and introductory mathematics courses (MAC1147 or MAC1140 or MAC1114) should choose this major.

