Engineering

MAJOR

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Associate Professors: Abdo, Eltayeb, E. Moore (Chair)
Assistant Professors: Liu, Speights, Wondmagegn

Mission Statement

The mission of the FSU Engineering Program is to provide excellent undergraduate education in engineering; to establish close partnership with and provide technical knowledge to industry, government and local business; to contribute to economic development within the state of Maryland, specifically in the Western Maryland region; and to provide related services to the campus community and community at large.

Program Educational objectives

Within the first few years following graduation, alumni of the Engineering BS program will demonstrate:

- Meet expectations in engineering careers or graduate education.
- Demonstrate appropriate utilization of professional skills of teamwork, problem solving, design, research and communication with all participants.
- Engage in the community through the application of knowledge of ethical obligations to society, employers, employees and peers.
- Engage in life-long learning to update their technical knowledge and understanding of societal and contemporary issues.

Program Outcomes

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- an ability to communicate effectively with a range of audiences
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact

of engineering solutions in global, economic, environmental, and societal contexts
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
  a. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

B.S. in Engineering at AACC and Cecil College

The B.S. in Engineering is also offered at the Anne Arundel Community College Regional Higher Education Center at Arundel Mills in collaboration with AACC (electrical engineering) and at Cecil College (materials engineering). Students with an associate degree in engineering may complete the bachelor’s degree through onsite, interactive video, and online courses offered at these sites. See following pages.

Program Requirements

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Requirements for Major in Engineering

1. Core Courses (42 hours)
   CHEM 201 General Chemistry I (GEP Group C)
   ENES 100 Introduction to Engineering Design
   ENES 401 Fundamentals of Energy Engineering
   ENME 271 Numerical Methods in Mechanical Engineering
   ENME 272 Introduction to Computer-Aided Design
   MATH 236 Calculus I (Core Skill 3)*
   MATH 237 Calculus II*
   MATH 238 Calculus III*
   MATH 432 Differential Equations*
   PHYS 261 Principles of Physics I – Mechanics, Waves and Oscillations (GEP Group C)*
   PHYS 262 Principles of Physics II – Thermodynamics, Electricity and Magnetism*
PHYS 263 Principles of Physics III – Light and Modern Physics*

*All majors must earn a C or better in MATH 236, MATH 237, MATH 238, MATH 432, PHYS 261, PHYS 262, and PHYS 263.

2. Area of Concentration (45-47 hours)
Majors must choose to concentrate in one of the following areas:

Electrical Engineering (45-47 hours)
ENEE 204 Basic Circuit Theory
ENEE 206 Fund. Digital and Electric Circuits Lab
ENEE 244 Digital Logic Design
ENEE 303 Analog and Digital Electronics
ENEE 307Electronic Circuits Lab
ENEE 322 Signal and System Theory
ENEE 350 Computer Organization
ENEE 380 Electromagnetic Theory
ENEE 445 Introduction to Communication Systems
ENEE 408 Capstone Design Project for Electrical Engineers
ENEE 439 Topics in Signal Processing
ENEE 475 Power Electronics
ENEE 481 Project Development in Electrical Engineering
ENES 310 Mechatronic and Robotic Design
Two electives from any 300- or 400-level ENEE, ENES or ENME course or CHEM 304

Materials Engineering (46 hours)
ENES 102 Statics
ENES 220 Mechanics of Materials
ENES 221 Dynamics
ENME 232 Thermodynamics
ENME 331 Fluid Mechanics
ENME 332 Transfer Processes
ENME 350 Electronics and Instrumentation I
ENME 351 Electronics and Instrumentation II
ENME 382 Engineering Materials and Manufacturing
ENME 405 Fundamentals of Materials Engineering
ENME 410 Capstone Design Project for Materials Engineering
ENME 425 Microfabrication
ENME 481 Project Development in Materials Engineering
Two electives from any 300- or 400-level ENEE, ENES, or ENME course or CHEM 304