Engineering

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Associate Professors:
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Assistant Professors:
Eltayeb (Chair), E. Moore

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:

- Broad knowledge of mathematics, physical science, and engineering science with emphasis in selected concentration areas of engineering to be successful in government, industry, private companies, and interdisciplinary graduate programs;
- Professional skills to function in multidisciplinary teams, use modern instruments, computers, and engineering software to solve engineering problems, perform research and participate in design projects;
- An understanding of professional responsibility to evaluate their ethical obligations to society, employers, employees, and peers;
- Motivation for life-long learning to update their technical knowledge and understanding of societal and contemporary issues.

Program Outcomes
Students will acquire the knowledge and skills needed to demonstrate the learning outcomes assessed throughout the curriculum. When students graduate, they will be able to

- Apply knowledge of mathematics, science, and engineering;
- Design and conduct experiments, as well as analyze and interpret data;
- Design a system, component, or process to meet desired needs;
- Function on multi-disciplinary teams;
- Identify, formulate, and solve engineering problems;
- Demonstrate an understanding of professional and ethical responsibility;
- Communicate effectively;
- Demonstrate the broad education necessary to understand the impact of engineering solutions in a global and societal context;
- Recognize the need for, and engage in, life-long learning;
- Demonstrate a knowledge of contemporary issues in engineering;
- Use the techniques, skills, and modern engineering tools necessary for engineering practice.

Summary of Requirements for Major in Engineering

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<tr>
<th>Major</th>
<th>ENME 350</th>
<th>ENME 351</th>
<th>PHYS 491</th>
<th>ENEE 408</th>
<th>ENES 401</th>
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<tbody>
<tr>
<td>1. Core Courses (56 hours)</td>
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<tr>
<td>ENES 100</td>
<td>Introduction to Engineering Design</td>
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<td>ENEE 114</td>
<td>Programming Concepts for Engineers</td>
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<tr>
<td>MATH 236</td>
<td>Calculus I (Core Skill 3)</td>
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<tr>
<td>MATH 237</td>
<td>Calculus II</td>
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<td>MATH 238</td>
<td>Calculus III</td>
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<td>MATH 432</td>
<td>Differential Equations</td>
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<tr>
<td>CHEM 201</td>
<td>General Chemistry I (GEP Group C)</td>
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<td>PHYS 261</td>
<td>Principles of Physics I - Mechanics (GEP Group C)</td>
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<td>PHYS 262</td>
<td>Principles of Physics II - E&amp;M</td>
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<td>PHYS 263</td>
<td>Principles of Physics III - Acoustics and Optics</td>
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<td>PHYS 264</td>
<td>Principles of Physics IV - Thermo. and Mod. Phys.</td>
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2. Area of Concentration (31-35 hours)
Majors must choose to concentrate in one of the following areas:

**Electrical Engineering (33-35 hours)**
- PHYS 312: Electricity and Magnetism
- 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 307: Electronic Circuits Lab
- ENEE 350: Computer Organization
- ENES 310: Mechatronic and Robotic Design
- ENEE 439: Topics in Signal Processing
- ENEE 475: Power Electronics

Two electives from any 300- or 400-level PHYS, CHEM, ENEE or ENME course

**Materials Engineering (31 hours)**
- ENES 102: Statics
- ENES 220: Mechanics of Materials
- ENES 221: Dynamics
- PHYS 311: Thermodynamics
- ENME 331: Fluid Mechanics
- ENME 332: Transfer Processes
- ENME 382: Engineering Materials and Manufacturing
- ENME 405: Fundamentals of Materials Engineering

Two electives from any 300- or 400-level PHYS, CHEM, ENEE or ENME course

**Engineering Management (33 hours)**
- ECON 200: Basic Economics OR ECON 201 Principles of Economics (Macro) (GEP Group D)
- ENES 102: Statics
- ENES 220: Mechanics of Materials
- ENES 221: Dynamics
- ENEE 204: Basic Circuit Theory
- MGMT 251: Management of Organizations
- MGMT 315: New Business Ventures OR MGMT 359 Quality Management
- MGMT 355: Operations Management
- MGMT 356: Leadership and Human Behavior
- MKTG 361: Principles of Marketing OR BLAW 291 Legal Environment of Business

One elective from any 300- or 400-level ENEE or ENME course