Mechanical Engineering

Collaborative Program

Major

Coordinator:
Mohammed Eltayeb, Department of Physics and Engineering

- A collaborative program between Frostburg State University and the University of Maryland, College Park, which allows students to remain on the Frostburg campus for four years while receiving a B.S. degree in mechanical engineering from UMCP.
- This program is accredited by the Accreditation Board for Engineering and Technology (ABET).
- The degree awarded to students completing the program is a B.S. from UMCP. Therefore, students enrolled in the collaborative program must complete UMCP’s general education program requirements.
- During the freshman and sophomore years, you will be enrolled as a pre-engineering major. You will complete general education and engineering science courses taught by faculty on-site at FSU. FSU tuition rates will apply.
- After completing 45 credits of designated course work, you must apply for admission to College Park’s Clark School of Engineering. After meeting UMCP’s admissions standards, you will be accepted into the second half of the program as an engineering major. UMCP’s tuition rates will apply for this part of the program. You must reapply for financial aid and scholarships through UMCP.
- Upper-level engineering courses will be delivered over interactive video from College Park to FSU. All laboratory and design courses will be taught by FSU faculty.
- To be granted advanced placement credit for a course, you must meet UMCP’s minimum requirements. These differ from FSU’s standards, with a higher score required by UMCP in a number of areas. Please consult the Engineering Coordinator to verify AP scores required to receive credit.

Mission Statement

The mission of the FSU Collaborative Mechanical Engineering Program is to provide excellent undergraduate education in mechanical 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

The Frostburg Collaborative Mechanical Engineering Program will graduate engineers who have:

1. Broad knowledge of mathematics, physical science and engineering science with emphasis in selected specialization areas of mechanical engineering to be successful in government, industry, private companies and graduate schools
2. Professional skills to function in multidisciplinary teams, use modern engineering tools and computer software, solve engineering problems, engage in design work or research and communicate with professionals
3. An understanding of professional responsibility to evaluate their ethical obligations to society, employers, employees and their peers
4. Motivation for lifelong learning to update their technical knowledge and understanding of societal and contemporary issues

Program Outcomes

The students of the Mechanical Engineering Collaborative Program will demonstrate throughout the curriculum:

a. An ability to apply knowledge of mathematics, science and engineering
b. An ability to design and conduct experiments, as well as to analyze and interpret data
c. An ability to design a system, component or process to meet desired needs
d. An ability to function on multidisciplinary teams
e. An ability to identify, formulate and solve engineering problems
f. An understanding of professional and ethical responsibility
g. An ability to communicate effectively
h. The broad education necessary to understand the impact of mechanical engineering solutions in a global and societal context
i. A recognition of the need for and an ability to engage in lifelong learning
j. A knowledge of contemporary issues in mechanical engineering
k. An ability to use the techniques, skills and modern engineering tools necessary for mechanical engineering practice

Summary of UMCP’s General Education Program Requirements

The University of Maryland will accept completion of FSU’s General Education Program. Minimum of 40 credit hours required

Summary of Pre-Engineering Requirements

1. Engineering Science Courses (12 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Codes</th>
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<tbody>
<tr>
<td>ENES 100</td>
<td>Introduction to Engineering Design</td>
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<td>ENES 102</td>
<td>Statics</td>
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<tr>
<td>ENES 220</td>
<td>Mechanics of Materials</td>
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<tr>
<td>ENES 221</td>
<td>Dynamics</td>
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2. Required Courses in Other Departments (44 hours)

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<thead>
<tr>
<th>Course</th>
<th>Description</th>
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<tbody>
<tr>
<td>CHEM 133</td>
<td>General Chemistry for Engineers (preferred)</td>
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<tr>
<td>or CHEM 202</td>
<td>General Chemistry II</td>
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<tr>
<td>CHEM 201</td>
<td>General Chemistry I (Meets GEP requirement)</td>
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<tr>
<td>ENGL 101</td>
<td>Freshman Composition (Meets GEP requirement)</td>
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<tr>
<td>ENGL 339</td>
<td>Scientific Writing</td>
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<tr>
<td>or ENGL 338</td>
<td>Technical Writing (Meets GEP requirement)</td>
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<tr>
<td>MATH 236</td>
<td>Calculus I (Meets GEP requirement)</td>
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<tr>
<td>MATH 237</td>
<td>Calculus II</td>
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Summary of Engineering Requirements

1. **Required Engineering Courses (41 hours)**
   - ENME 232 Thermodynamics
   - ENME 271 Numerical Methods in Mechanical Engineering (will satisfy MATH 206)
   - ENME 272 Introduction to Computer-Aided Design
   - ENME 331 Fluid Mechanics
   - ENME 332 Transfer Processes
   - ENME 350 Electronics and Instrumentation I
   - ENME 351 Electronics and Instrumentation II
   - ENME 361 Vibration, Controls and Optimization I
   - ENME 371 Product Engineering and Manufacturing
   - ENME 382 Engineering Materials and Manufacturing Processes
   - ENME 392 Statistical Methods for Product and Process Development
   - ENME 400 Machine Design
   - ENME 462 Vibration, Controls and Optimization II
   - ENME 472 Integrated Product and Process Development (Capstone)

2. **Elective Hours in Department (15 hours)**