College of Engineering and Computing

General Information

The mission of the College of Engineering and Computing is to serve society by providing high quality undergraduate and graduate education in the fields of computing and engineering. We are committed to creating an environment for teaching, learning, and scholarship that is inclusive, intellectually stimulating, interactive and innovative, and in which all students, staff, and faculty reach their full potential. Our guiding principle is to provide professional education integrated with Miami University’s traditional strength in liberal education.

Everyone in the College of Engineering and Computing values:

- Effective student learning and student success
- An intellectually stimulating and challenging environment
- Faculty growth and learning as teachers and scholars
- Diversity of staff, faculty, and students
- Respect for the environment

We are committed to a learning environment that fosters:

- Innovation and creativity
- Ethical behavior
- Inclusiveness and respect for others
- International and global opportunities and perspectives
- Fact-based, collegial decision-making and teamwork
- Safety in all our professional endeavors

First-Year Course Selection for Undeclared Students

The College of Engineering and Computing has developed the following first-year course pattern for students who have not declared a major and who want to progress satisfactorily in engineering and computing majors while maintaining maximum flexibility in considering other science/math-based programs. Advisors are available at summer orientation to help you select courses within this pattern. You will be assigned an advisor to help you with course and career selection while you remain an undeclared major. Once you have selected a major, an advisor in that area will be assigned to you.

If you have already chosen a major in engineering or computing, please refer to the program description for your chosen major later in this section for recommended first-year course selections.

If you are undecided about your major, but considering a major in the College of Engineering and Computing, select courses within the following pattern with the advice of an academic advisor:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEC 101</td>
<td>Computing, Engineering &amp; Society</td>
<td>1</td>
</tr>
<tr>
<td>ENG 111</td>
<td>Composition and Rhetoric (or equivalent)</td>
<td>3</td>
</tr>
<tr>
<td>MTH 151 or MTH 249</td>
<td>Calculus I or Calculus II</td>
<td>5</td>
</tr>
<tr>
<td>Select one of the following:</td>
<td></td>
<td>3-5</td>
</tr>
<tr>
<td>PHY 191</td>
<td>General Physics with Laboratory I</td>
<td></td>
</tr>
<tr>
<td>CHM 141 &amp; CHM 144</td>
<td>College Chemistry and College Chemistry Laboratory</td>
<td></td>
</tr>
<tr>
<td>Biological Science course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select one of the following:</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Global Miami Plan elective (IIA, IIB, or III)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSE 174</td>
<td>Fundamentals of Programming and Problem Solving</td>
<td></td>
</tr>
<tr>
<td>Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select one of the following:</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CPB 102</td>
<td>Introduction to Chemical and Biomedical Engineering</td>
<td></td>
</tr>
<tr>
<td>CSE 102</td>
<td>Introduction to Computer Science and Software Engineering</td>
<td></td>
</tr>
<tr>
<td>ECE 102</td>
<td>Introduction to Electrical and Computer Engineering</td>
<td></td>
</tr>
<tr>
<td>MME 102</td>
<td>Introduction to Mechanical and Manufacturing Engineering</td>
<td></td>
</tr>
<tr>
<td>Global Miami Plan elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MTH 251 or MTH 252</td>
<td>Calculus II or Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>Select one of the following:</td>
<td></td>
<td>3-6</td>
</tr>
<tr>
<td>PHY 192</td>
<td>General Physics with Laboratory II</td>
<td></td>
</tr>
<tr>
<td>CHM 142 &amp; CHM 145</td>
<td>College Chemistry and College Chemistry Laboratory</td>
<td></td>
</tr>
<tr>
<td>Global Miami Plan electives (IIA, IIB, or III not taken above)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit Hours</td>
<td></td>
<td>13-16</td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td></td>
<td>28-33</td>
</tr>
</tbody>
</table>

1 Students typically start with MTH 151. Depending on the ACT/SAT score or high school background, however, a student may start with MTH 125 or MTH 249. Taking a prerequisite course to MTH 151 (MTH 125) will usually not hinder a student’s academic progress.

Choosing Liberal Education Electives

All programs in the College have liberal education elective courses and Thematic Sequence components of the Global Miami Plan for Liberal Education. You are encouraged to seek advice from a faculty advisor in choosing electives that are consistent with your interests and educational goals.

Study Abroad

Students are encouraged to consider spending a summer term, winter term, semester, or year studying abroad. This experience offers a valuable opportunity to enrich students’ cultural perspectives
Divisional Requirements

DOUBLE MAJORS: Students with two majors in the College of Engineering and Computing must take a minimum of 15 unique, additional credit hours in their second major beyond the requirements of the first major.

Students must attain a minimum 2.00 GPA for required departmental courses in their major. Specific course requirements for each of the College's majors are listed in this chapter.

If you have any questions about these requirements, please contact your academic advisor.

Basic Requirements: Bachelor of Science Programs

The combination of a professional education in the major and the Miami Plan for Liberal Education promotes growth of the breadth and depth of students’ skills and abilities. With the help of the Engineering and Computing Advisory Council representatives from business, industry, government and academia, the College has articulated broad outcome characteristics desired of our graduates.

College of Engineering and Computing graduates should be able to:

- Define and solve problems
- Make ethical choices and act responsibility
- Critically evaluate information
- Work effectively on a team
- Exercise initiative
- Function in a leadership role
- Recognize broad societal contexts and interests
- Serve clients and society with sensitivity and accountability
- Value diversity, equity and inclusivity in addressing societal needs
- Interact effectively with diverse cultures
- Adapt to change
- Recognize the value of lifelong learning
- Write effectively
- Speak and listen effectively
- Understand and apply mathematics and science
- Understand and apply the principles of continuous quality improvement
- Pursue further formal education

Bachelor of Science in Computer Science

- Computer Science

Bachelor of Science in Engineering

- Biomedical Engineering
- Chemical Engineering
- Computer Engineering
- Electrical Engineering
- Engineering Management
- Manufacturing Engineering
• Mechanical Engineering
• Robotics Engineering

Bachelor of Science in Software Engineering
• Software Engineering

Minors
A minor is a specific program to be taken along with a major to complement your skills and to increase your career opportunities. Completing a minor is optional. More information about minors is included in the Other Requirements section. The required semester hours are noted with the requirements for each minor.

• Bioinformatics
• Chemical Engineering
• Clinical Engineering
• Computer Science
• Electrical Engineering
• Environmental Engineering
• Humanitarian Engineering and Computing
• Mechanical Engineering
• Paper Engineering
• Paper Science
• Process Control
• Regulatory Affairs

Certificate Programs
• Advanced Manufacturing and Materials Evaluation
• Leadership