

# College of Engineering and Computing

## Advising Office

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## General Information

The College of Engineering and Computing's mission 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 intellectually stimulating, interactive, and innovative; in which our faculty, staff, and students 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 student body
- Respect for the environment

We are committed to an environment that fosters:

- Innovation and creativity
- Ethical behavior
- Respect for others and teamwork
- International and global opportunities and perspectives
- Fact-based, collegial decision-making
- 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. Faculty advisors are available at summer orientation to help you select courses within this pattern. You will be assigned a faculty advisor to help you with course and career selection while you remain an undeclared major. Once you have selected a major, a faculty 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 a faculty advisor:

Course	Title	Credit Hours
<b>Fall</b>		
CEC 101	Computing, Engineering & Society	1
ENG 111	Composition and Rhetoric (or equivalent)	3
MTH 151 or MTH 249	Calculus I <sup>1</sup> or Calculus II	5
Select one of the following:		3-5
PHY 191	General Physics with Laboratory I	
CHM 141 & CHM 144	College Chemistry and College Chemistry Laboratory	
Biological Science course		
Select one of the following:		3
Global Miami Plan elective (IIA, IIB, or III)		
CSE 174	Fundamentals of Programming and Problem Solving	
Credit Hours		15-17
<b>Spring</b>		
Select one of the following:		3
CPB 102	Introduction to Chemical and Bioengineering	
CSE 102	Introduction to Computer Science and Software Engineering	
ECE 102	Introduction to Electrical and Computer Engineering	
MME 102	Introduction to Mechanical and Manufacturing Engineering	
Global Miami Plan elective		3
MTH 251 or MTH 252	Calculus II or Calculus III	4
Select one of the following:		5-6
PHY 192	General Physics with Laboratory II	
CHM 142	College Chemistry	
Global Miami Plan electives (IIA, IIB, or III not taken above)		
Credit Hours		15-16
Total Credit Hours		30-33

<sup>1</sup> Typically, students start with MTH 151. Depending on results of the math placement exam, ACT/SAT score, and high school background, however, you may start with MTH 104, MTH 123, or MTH 249. Students who take a prerequisite course to MTH 151 (MTH 104 or MTH 123) will usually not hinder their 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 and understanding and to help understand the needs of clients in computing and engineering in our increasingly global society. Students considering study abroad need to meet with their advisor and plan their curriculum as early as possible.

## Honorary and Professional Organizations

Through honorary and professional organizations, you can further develop leadership skills, interact with professionals in your field, and engage in educational activities which have significance beyond the campus.

A partial list of organizations connected with the College of Engineering and Computing include: American Institute for Aeronautics and Astronautics, American Institute of Chemical Engineers, American Society for Mechanical Engineers, Association for Computing Machinery, Association for Women in Computing, Engineers Without Borders, Institute for Electrical and Electronics Engineers, National Society of Black Engineers, National Society of Professional Engineers, Society of Automotive Engineers, Society of Manufacturing Engineers, Society of Women Engineers, Student Energy Initiative, Tau Beta Pi, and the Technical Association of the Pulp and Paper Industry.

## Advisory Councils

The Engineering and Computing External Advisory Council is composed of outstanding leaders in business, industry, and the professions. This council meets on campus at least once a year with faculty, staff, and students, helping to ensure that the College's programs continually improve and meet society's changing needs.

The College and our departments are also advised by student advisory councils to continually improve our programs.

## Intern and Co-op Opportunities

Internships and co-ops provide an opportunity for students in engineering and computing to gain work experience in an area related to their majors.

Both programs offer employers an opportunity to preview prospective employees and for students to preview prospective employers. Most companies pay their intern and co-op students. Contact Career Services for more information.

## Placement and Graduate Studies

Most graduates enter professions directly upon graduation. Each year many employers visit campus specifically to recruit engineering and computing seniors. Placement rates for graduates of the College have consistently remained high. Placement services are available to all Miami students through the Office of Career Services.

Our graduates are also well prepared to pursue graduate education, including medical and law school. Assistantships are frequently available in the graduate programs at other universities in addition to Miami University. Many graduates, who enter their profession directly, pursue graduate degrees on a part-time basis with the financial support of their full-time employer.

## Divisional Requirements

**DOUBLE MAJORS:** Students with two majors in the College of Engineering and Computing must take a minimum of 15

different/additional credit hours in their second major beyond the requirements of their first major.

You must attain a minimum 2.00 GPA for required departmental courses in your 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 faculty academic advisor.

## Basic Requirements: Bachelor of Science Programs

Students derive their strength from a curriculum that is a unique combination of professional education in the major discipline and the Miami Plan for Liberal Education. With the help of the Engineering and Computing Advisory Council representatives from business, industry and other areas, 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 responsibly
- Critically evaluate information
- Work effectively in a team
- Exercise initiative
- Function in a leadership role
- Recognize broad societal contexts and interests
- Serve clients and society with sensitivity and accountability
- 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 concepts of continuous quality improvement
- Pursue further formal education

## Bachelor of Science in Computer Science

- Computer Science

## Bachelor of Science in Engineering

- Bioengineering
- Chemical Engineering
- Computer Engineering
- Electrical Engineering
- Engineering Management
- General Engineering
- Manufacturing Engineering
- Mechanical 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.

- Bioengineering
- Bioinformatics
- Chemical Engineering
- Computer Engineering
- Computer Science
- Electrical Engineering
- Environmental Engineering
- Humanitarian Engineering and Computing
- Manufacturing Engineering
- Mechanical Engineering
- Paper Engineering
- Process Control

### **Certificate Program**

- Leadership