College of Engineering and Computing

Advising Office
205 Benton Hall
Phone: 513-529-0700
www.cec.MiamiOH.edu

General Information

At the College of Engineering and Computing, our vision is to be an inclusive community of scholars known for exceptional personalized engineering and computing education. Our mission is to champion technical innovation, an entrepreneurial mindset, leadership, and the advancement of technology for societal good. The Strategic Plan for achieving the vision and mission is here.

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:

Course	Title	Credit Hours
Fall		
CEC 111	Imagination, Ingenuity and Impact I	2
ENG 111	Composition and Rhetoric (or equivalent)	3
MTH 151 or MTH 249	Calculus I [1] or Calculus II	5
Select one of the following (talk to an advisor):		4-5
PHY 181	General Physics I [2]	
CHM 141 & CHM 144	College Chemistry and College Chemistry Laboratory [2]	
Select one of the following:		3
Miami Plan Perspectives Area & Signature Inquiry Elective		
CSE 174	Fundamentals of Problem Solving and Programming	
	Credit Hours	**17-18**
Spring		
CEC 112	Imagination, Ingenuity, and Impact II	2
MTH 251 or MTH 252	Calculus II or Calculus III	4
Miami Plan Perspectives Areas & Signature Inquiry Elective		3
Select one of the following (talk to an advisor):		4-5
PHY 182	General Physics II [2]	
CHM 142 & CHM 145	College Chemistry and College Chemistry Laboratory	
	Credit Hours	**13-14**
	Total Credit Hours	**30-32**

[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.

[2] Consult with an advisor regarding the need for an associated lab course based on your intended major: PHY 183 (with PHY 181), PHY 184 (with PHY 182), CHM 144 (with CHM 141).

Choosing Liberal Education Electives

All programs in the College have general education electives that fulfill the 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 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, students can develop leadership skills, interact with professionals in their fields,

and engage in educational activities that have significance beyond the campus.

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

Advisory Councils

The College of Engineering and Computing and its departments have advisors representing students, faculty, staff, and professional leaders -- including alumni -- from business, industry, government and academia. Advisory groups ensure that CEC and its departments are continuously improving in serving the changing needs of each constituency and society. Advisory groups include the CEC Executive Advisory Council, departmental External Advisory Councils, and Student Leadership Councils. The Executive Advisory Council and departmental External Advisory Councils typically meet at least twice a year with faculty, staff, and students. Student Advisory/Leadership Councils and faculty committees typically meet multiple times each semester.

Internship and Co-op Opportunities

Internship and co-op programs provide opportunities 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 intern and co-op students. Contact the Center for Career Exploration and Success 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 been consistently high. Placement services are available to all Miami students through the Center for Career Exploration and Success.

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 professions directly also pursue graduate degrees on a part-time basis with the financial support of their employers.

Divisional Requirements

MULTIPLE MAJORS: Students with two or more majors in the College of Engineering and Computing must take a minimum of 15 unique, additional credit hours in each 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 Executive and External Advisory Councils and 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 Arts in Computer Science

- Computer Science

Bachelor of Science in Computer Science

- Computer Science

Bachelor of Science in Cybersecurity

- Cybersecurity

Bachelor of Science in Engineering

- Biomedical Engineering
- Chemical Engineering
- Computer Engineering
- Electrical Engineering
- Engineering Management
- Mechanical Engineering
- Robotics Engineering
- Smart Manufacturing 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
- Climate Accounting and Engineering
- Clinical Engineering
- Computer Science
- Cybersecurity
- Deep Learning and Artificial Intelligence
- 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
- Paper Engineering Certificate for Electrical Engineers