CIVIL ENGINEERING MAJOR

Program Director: Natasha Andrade, Ph.D.

The Bachelor of Science in Civil Engineering degree program at the University of Maryland is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org, under the General Criteria and the Civil Engineering Program Criteria.

The Bachelor of Science in Civil Engineering offers a robust and comprehensive education designed to prepare students for dynamic careers in infrastructure design, environmental protection, and sustainable development. This 122-credit curriculum is carefully structured to provide a balance between theoretical knowledge, practical skills, and real-world application in various areas critical to civil engineering. Throughout the program, students gain hands-on experience through project-based learning, lab work, and a capstone design sequence that simulates professional engineering and construction practice.

Admission to the Major

See the entrance requirements for the A. James Clark School of Engineering (https://academiccatalog.umd.edu/undergraduate/colleges-schools/engineering/) in the Colleges and Schools section of this catalog.

Mission

The mission of the Department of Civil and Environmental Engineering at the University of Maryland is to educate, create knowledge, and engage communities so that society can thrive within the changing built and natural world.

Our mission encompasses the following objectives:

1. Provide a high quality, challenging education that encompasses breadth and depth; and prepare graduates to be proficient in both analysis and synthesis facets of civil engineering design;
2. Maintain a strong research program that is recognized for excellence in major areas of civil and environmental engineering;
3. Provide service to the university, the civil engineering profession, and the community at large.

The department provides an educational program of basic and specialized engineering knowledge necessary for its graduates to be proficient in recognized specialties of civil engineering. This preparation provides graduates with the tools needed for successful practice in the period following graduation. In addition to general and technical education, the educational program stresses professional and ethical responsibilities, an awareness of societal issues, and the need for life-long learning.

The department contributes to the advancement of knowledge through research on important engineering problems. The research results are communicated through recognized channels of knowledge dissemination.

The department serves the needs of the community by emphasizing global and societal issues. The department addresses these issues through university and professional channels and contributes to their solutions.

Program Educational Objectives

The Department of Civil and Environmental Engineering has established the following program educational objectives:

- To understand, apply and develop fundamental knowledge in science, technology, engineering, and mathematics.
- To attain advanced qualification in both specialization and breadth.
- To understand and apply business sensitive criteria in meeting professional responsibilities.
- To incorporate societal sensitive criteria into professional decisions.
- To develop forward-thinking attitudes that enhance lifelong learning, diversity, equity, inclusion, communication, and exemplary practice.

Student Learning Outcomes

In addition to ensuring the technical competency of all graduates in the broad discipline areas of civil engineering, the department must encourage the development of skills and abilities that will enhance the marketability of its graduates and provide them with the best possible opportunity for success in the workplace. As a result, the faculty has agreed to develop the following abilities and skills within each graduate and has approved the following Student Outcomes:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science and mathematics
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. An ability to communicate effectively with a range of audiences
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

REQUIREMENTS

Freshman Year

First Semester	Credits	Second Semester	Credits
ENES100	3	PHYS161	3
CHEM135	3	MATH141	4
MATH140	4	ENES102	3
*SCIENCE ELECTIVE	3	ENES200	3
ENGL101	3	General Education Program Requirements	3
	16		**16**

Sophomore Year

First Semester	Credits	Second Semester	Credits
PHYS260	3	MATH243	4
PHYS261	1	GENERAL EDU	3 RAM REQUIREMENTS
MATH241	4	GENERAL EDUCATION PROG	3 RAM REQUIREMENTS
ENES220	3	ENCE305	3
ENCE202	3	ENCE203	3
	14		**16**

Junior Year

First Semester	Credits	Second Semester	Credits
ENCE303	3	ENCE340	3
ENCE312	3	ENCE383	3
ENCE365	4	ENCE367	4
ENCE336	3	ENCE436	3
ENGL39X	3	ENCE342	3
	16		**16**

Senior Year

First Semester	Credits	Second Semester	Credits
**ELECTIVE	3	**ELECTIVE	3
**ELECTIVE	3	**ELECTIVE	3
ENCE483	3	ENCE467	2
ENCE442	3	GENERAL EDU	3 RAM REQUIREMENTS
ENCE464	2	GENERAL EDUCATION PROG	3 RAM REQUIREMENTS
	14		**14**

Total Credits 122

*Science Elective – can choose from ENCE205, GEOL120, GEOL123, ENSP101, BSCI160, or ECON200

**Electives restrictions: 6 credits of In-Major Technical Electives required (ENCE only), 3 credits of STEM-Based Elective (in-major or out-of-major), and 3 credits of an Open Elective (requires pre-approval of the Civil & Environmental Engineering (CEE) department, 300-level or above, in-major or out-of-major).

Rule: Out of the following courses, students can only take 2: ENCE325, ENCE420, ENCE421, ENCE423, ENCE424, or ENCE426

GRADUATION PLANS

Click here (https://eng.umd.edu/advising/four-year-plans/) for roadmaps for graduation plans in the A. James Clark School of Engineering.

Additional information on developing a graduation plan can be found on the following pages:

- http://4yearplans.umd.edu
- the Student Academic Success-Degree Completion Policy (https://academiccatalog.umd.edu/undergraduate/registration-academic-requirements-regulations/academic-advising/#success) section of this catalog