

Degree Type – Bachelor of Science (BS)
Degree Title – Civil Engineering

The Civil Engineering Program prepares graduates for local, regional or world-wide employment in the engineering profession or placement in a graduate school. The program affords students opportunities to meet and interact with practicing engineers, businesses and government agencies; to participate in professional engineering organizations and in research. The faculty endeavor to be accessible, maintain state of the art instruction and facilities, and to provide liberal access to laboratories and academic support.

STUDENT LEARNING OUTCOMES:

At the time of graduation, students will attain:

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

The program must prepare graduates to:

1. Apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of basic science, consistent with the program educational objectives.
2. Apply knowledge of four technical areas appropriate to civil engineering (structures, geotech, water resources, and engineering management).
3. Conduct civil engineering experiments and analyze and interpret the resulting data.
4. Design a system, component, or process in more than one civil engineering context.
5. Explain basic concepts in management, business, public policy, and leadership; and explain the importance of professional licensure.

A – GENERAL EDUCATION CORE – 42 HOURS

Students must fulfill the General Education Core requirements. The courses listed below satisfy both degree requirements and General Education Core requirements.

Required**Mathematics – 3 hours**

MATH 2413 Calculus I (or MATH 2487 Honors) three-hour lecture

Life and Physical Science – 6 hours

PHYS 2425 Physics for Scientists and Engineers I three-hour lecture

PHYS 2426 Physics for Scientists and Engineers II three-hour lecture

Language, Philosophy, and Culture – 3 hours

PHIL 1310 Ethics, Happiness, and the Good Life (Must be Engineering/Computer Science section)

Integrative and Experiential Learning – 6 hours

Choose any 3 credit hour English Course, and complete:

PHYS 2425 Physics for Scientists and Engineers I one-hour lab

PHYS 2426 Physics for Scientists and Engineers II one-hour lab

Choose corresponding lab from Basic Science section below:

CHEM 1107 Chemistry for Engineers Lab

CHEM 1111 General Chemistry I Lab

B – MAJOR REQUIREMENTS – 76 HOURS (54 advanced)**1 – Civil Engineering Core – 67 hours (45 advanced)**

CIVE 1221 Engineering Graphics
 CIVE 2220 Civil Engineering Measurements
 CIVE 2240 Materials of Construction
 CIVE 3315 Fluid Mechanics and Hydraulics
 CIVE 3115 Fluid Mechanics and Hydraulics Laboratory
 CIVE 3252 Civil Engineering Systems Analysis
 CIVE 3324 Structural Analysis
 CIVE 3331 Environmental Engineering
 CIVE 3341 Structural Steel Design
 CIVE 3345 Transportation Engineering
 CIVE 3475 Geotechnical Engineering and Applications
 CIVE 4315 Applied Hydrology
 CIVE 4335 Water Resources Engineering
 CIVE 4346 Reinforced Concrete Design
 CIVE 4349 Constructional Planning and Management
 MANE 2332 Engineering Statistics
 MECE 2301 Statics
 MECE 2302 Dynamics
 MECE 2340 Engineering Materials
 MECE 2140 Engineering Materials Lab
 MECE 2350 Numerical Methods for Engineers
 MECE 3321 Mechanics of Solids
 MECE 3449 Mechanical Engineering Analysis I
 MECE 3450 Mechanical Engineering Analysis II

2 – Senior Design – 3 hours (3 advanced)

CIVE 4190 Civil Engineering Senior Design Project I
 CIVE 4290 Civil Engineering Senior Design Project II

3 – Technical Electives – 6 hours (6 advanced)

Choose from:

CIVE 4333 Water and Wastewater Treatment
 CIVE 4347 Foundation Design
 CIVE 4348 Highway Engineering
 CIVE 4350 Open Channel Flow
 CIVE 4351 Masonry and Timber Design
 CIVE 4352 Earthwork Engineering and Design
 CIVE 3300 Internship/Co-Op in Civil Engineering

C – SUPPORT COURSES – 11 HOURS MINIMUM**1 – Basic Science – 6 hours minimum**

Choose one:

CHEM 1307 Chemistry for Engineers

CHEM 1311 General Chemistry I

Choose one:

GEOL 3308 Introduction to Geographic Information Systems

GEOL 1403 Physical Geology

ENVR 3304 Environmental Approaches to Sustainable Development

ENVR 4301 Environmental Regulations

BIOL 1406 General Biology I (or BIOL 1487 Honors)

GEOL 1401 Earth Sciences I

GEOL 1404 Historical Geology

ENVR 1401 Environmental Science I

ENVR 1402 Environmental Science II

2 – Mathematics – 5 hours

MATH 2413 Calculus I (or MATH 2487 Honors) one-hour lecture

MATH 2414 Calculus II (or MATH 2488 Honors)

TOTAL CREDIT HOURS FOR GRADUATION – 129 HOURS**TOTAL ADVANCED HOURS – 54 HOURS****ADMISSION, PROGRESSION, AND GRADUATION REQUIREMENTS, if applicable:****Progression requirements**

Students must receive a grade of 'C' or better in all courses that are prerequisites for civil engineering courses.

Graduation requirements

1. Students must receive a grade of 'C' or better in all civil engineering courses.
2. In addition to the graduation requirements listed in the UTRGV 2015-2017 Undergraduate Catalog, demonstration of proficiency in a language other than English is required at the undergraduate level equivalent to a minimum of six credit hours. Proficiency can be demonstrated by a college credit exam, a placement test approved through the UTRGV Department of Writing and Language Studies, and/or up to six credit hours of college-level language coursework.