Civil Engineering
Jesus S. Larralde-Muro, *Coordinator*
Engineering East Building, Room 178
559.278.2566

Program Description

Civil engineering includes the research, development, planning, design, construction, and maintenance associated with urban development, water supply, structures, energy generation and transmission, water treatment and disposal, and transportation systems. The civil engineer deals with the function and safety of such public facilities as buildings, bridges, dams, pipelines, powerplants, highways, and harbors, and is concerned with the protection of the public against natural hazards of earthquakes, floods, landslides, and fires.

The graduate curriculum leading to an M.S. in Civil Engineering provides specialized training in the fields of structural engineering and applied mechanics, soil mechanics and foundation engineering, environmental engineering, water resources engineering, highway engineering, and geomatics engineering.

Career Opportunities

Employment opportunities for civil engineers in industry, state, and federal government agencies remain at a high level as a result of increasing urban growth and land development, and the recent emphasis on the maintenance and repair of the nationwide highway system. Civil engineers are also in demand to meet the growing challenge of mitigating environmental hazards.

Civil engineers frequently occupy positions in specialty areas such as environmental engineering, geotechnical engineering, structural engineering, transportation engineering, and water-resources engineering. Position titles for civil engineers, such as senior engineer or project engineer in specialty areas, typically reflect their rank within their organization.

Most civil engineering graduates have earned professional licenses as civil engineers within a few years of receiving their degrees.

Mission of Civil Engineering

The mission of the Civil Engineering Program is to provide the educational environment necessary for civil engineering students to develop their personal potential to the greatest extent possible and to enrich the students' lives in a culturally diverse environment. Civil engineering also provides the high quality education required for the students to fully develop their professional qualities and skills to serve society.

The Civil Engineering Program's Educational Objectives

- The graduates of the civil engineering program should be well-rounded to function effectively both as professional civil engineers and as responsible and informed citizens.
- The graduates of the civil engineering program should practice the profession of civil engineering proficiently with a well-balanced preparation in engineering fundamentals and practical applications in any of the following four areas of civil engineering: environmental, geotechnical, structural, or transportation.
- The graduates of the civil engineering program should use the technical tools and skills required for effective professional practice and should continue learning in their professional lives to remain abreast of new developments and advances.
- The graduates of the civil engineering program should function effectively in multicultural and multidisciplinary groups in their practice of the civil engineering profession. They should be able to communicate effectively with engineering peers, other professionals, and with the public in general.
- The graduates of the civil engineering program should practice their profession with an understanding of the social and political implications of their professional engineering work and do so guided by the ASCE Code of Ethics.

Bachelor of Science Degree Requirements

Civil Engineering Major — *Units*

Major requirements 67

CE 20, 85, 121L, 123, 123L, 128, 129, 130, 132, 133, 142, 150, 180A, 180B, 185 ..... (36)
CE 124 and 142L ..... (2)
GME 15, 15L ..... (3)
GME 66 or ME 26 ..... (3)
ECE 70 and 91 ..... (6)
CE 161 ..... (2)
ME 112 ..... (3)

Technical Area Courses ..... (12)
Select mandatory technical area courses in one or more of the following groups subject to the *Design Courses* statement below.
Environmental and Water Resources: CE 140, 141, 144
General Professional: CE 161, 190, 191T
Geotechnical: CE 125, 134
Structures: CE 131, 136, 137
Geomatics: GME 151, 173
Transportation: CE 151, 152, 153

Design Courses: at least 9 units of technical area courses must be selected from the following design courses: CE 125, 134, 136, 141, 144, 151

Other requirements 63

General Education
Select one course from each of the G.E. areas: Area A1, A2, B2, C1, D1, D2, D3. (See pages 89-92 for G.E. listings.)
The following courses are required to satisfy both G.E. and major requirements: MATH 75 [B4], CHEM 3A [B1], PHIL 1 or 10 [C2], CE 121 [IB], PHIL 120 [IC], PLSI 120 [M/I]

Additional requirements
EES 1; MATH 76, 77,81; PHYS 4A, 4AL, 4B

Total 130

Note: Engineering majors are exempt from G.E. Area A3, third course Area C, Area E, and Area ID.

Advising Notes

1. Courses in mathematics, the physical sciences, or engineering taken ***CR/NC*** are not counted toward fulfillment of degree requirements in civil engineering.
2. The Upper-Division Writing Skills requirement can be met by passing the university examination or by completing a "W" course with a letter grade of ***C*** or better no sooner than the term in which 60 units of coursework are completed.
3. All civil engineering students must consult with their academic adviser at least once each year.

See the catalog Web site for recommended program at *www.csufresno.edu/catoffice/current/engcivrec.html*.