What is Civil Engineering?

Civil engineers are instrumental in planning and designing the infrastructure we take for granted in towns, cities and rural areas. This infrastructure includes structures, transportation systems, water supply systems and sewage disposal systems. Civil engineers work in a variety of different professional settings, and may specialize in one of the following areas:

- Structural Engineering
- Geotechnical Engineering
- Environmental Engineering
- Water Resources Engineering
- Transportation Engineering

Civil engineers also work as general civil engineers or managers of large projects with teams of civil engineering specialists. Many civil engineers work on design teams in the office to decide how a project should be built. Their products are reports, drawings, and contract documents. Civil engineers may also work with construction managers to build the facilities after they have been designed. Other civil engineers plan, design, and implement projects to ensure that facilities are repaired as needed. Operation engineers (such as traffic engineers and water treatment plant engineers) keep the systems working efficiently.

CAREERS: Opportunity, Variety, and Challenge

Together the varieties of technical work, and types of work places, result in a wide range of choices for civil engineers. All civil engineering jobs involve both technical work and communication, which is vitally important on large projects requiring teamwork. Civil engineers are needed in all urban and rural areas and the challenges ahead for this field of engineering are exciting.

Today, civil engineers make use of modern technologies to find solution for important problems such as reduction of air and water pollution, management of hazardous waste, and the safety of facilities such as schools, bridges, highways, dams and pipelines. If you are interested in a challenging career with good pay and benefits, if you want to work on projects that benefit people, if you like to solve problems and figure out how to make things work better, Civil Engineering could be the right career for you.

The Program at Sacramento State

The mission, goals and objectives of the BSCE program are articulated as follows:

Mission: The mission of the Bachelor of Civil Engineering degree program is to provide and outstanding, practice-oriented education in civil engineering.

Goal: the goal of the program is to educate students in an inspirational environment, enabling them to begin their professional careers as competent and thoughtful civil engineers.

Objectives: the objectives of this program are to prepare graduates to:

1. Succeed in professional employment and/or graduate study in civil engineering;
2. Identify, analyze, and solve practical civil engineering problems;
3. Apply knowledge of Environmental, Geotechnical, Structural, Transportation, and Water Resources Engineering to design of civil engineering projects;
4. Communicate effectively with their peers, other professionals, decision makers, and the general public, in the conduct of their work; and
5. Practice civil engineering in a professionally responsible and ethical manner.

The objectives describe the features that are considered important in an outstanding practice oriented education in Civil Engineering, (ABET).
Faculty and Students

The Civil Engineering program has 10 full time faculty, and many part time instructors. Faculty have expertise in the major areas of specialization in Civil Engineering. Many are currently involved in research, projects, and other activities which support teaching by enhancing currency in their field or enhancing utilization of modern technologies in the delivery of instruction.

Students come to our program either directly from high school or as transfer students from a junior college. We have over 600 undergraduate and 50 graduate students in Civil Engineering. Many of our students work part time in their field and many are active in student chapters of professional organizations.

The Student Chapter of the American Society of Civil Engineers is our most active student organization. One of the highlights for students during recent years has been unprecedented success in competitions for the design, construction and racing of the concrete canoe, and design and construction of the steel bridge. Our teams have been successful in regional and national competitions. Participation in ASCE provides the opportunity for students to develop teamwork, organizational and project management skills, as well as an opportunity to interact with professional engineers.

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High School Preparation

In preparation for a career in Civil Engineering you are advised to take algebra, trigonometry, analytical geometry, physics, chemistry, and computer courses. Courses in English, speech, and foreign language will also prepare you for study in Civil Engineering. A pre-calculus or calculus class taken in high school will enable you to complete the Bachelor of Science in Civil Engineering degree in a timely manner.

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