UNIVERSITY OF LOUISVILLE
J.B. SPEED SCHOOL OF ENGINEERING

WHAT IS CIVIL ENGINEERING?

Civil engineers are the primary designers and builders of cities, transportation, supply and energy systems. They design and supervise construction of buildings, highways, bridges, foundations, railways, canals and locks, tunnels, airports, water supply and sewage systems, dams and power plants. They must consider many factors including construction costs, government regulations, and potential environmental hazards such as earthquakes and hurricanes. Thought by many to be the oldest engineering discipline, civil engineering encompasses many specialties:

- Construction
- Environmental
- Geotechnical
- Structural
- Transportation
- Urban Planning
- Water Resources

Civil engineers often work with architects, urban planners, economists, biologists, and geologists, applying the latest technology in computer-aided design, geographic information systems, construction, project scheduling, cost control and management, and simulation modeling.

WHY BECOME A CIVIL ENGINEER?

According to the U.S. Department of Labor's Occupational Outlook Handbook, civil engineers held about 256,000 jobs in 2006. 49% were employed by firms providing architectural, engineering, and related services, primarily developing designs for new construction projects. Almost one-third of the jobs were in federal, state, and local government agencies. The construction industry accounted for most of the remaining employment. About 15,000 civil engineers were self-employed, many as consultants.

Civil engineers usually work near major industrial and commercial centers. Some projects are in remote areas or in foreign countries. In some jobs, civil engineers move from place to place to work on different projects. The spectrum of opportunities for a civil engineer range from work in an office setting, doing computer design or project management, to work outdoors, performing construction supervision and job site management.

The National Association of Colleges and Employers reported that 2007-08 civil engineering graduates with a bachelor's degree received annual starting salary offers averaging $51,632. Offers to those with a master's degree averaged $55,021.

Spurred by general population growth and an increased emphasis on infrastructure and security, more civil engineers will be needed to design and construct safe and higher capacity transportation, water supply and pollution control systems, and large buildings and building complexes. They also will be needed to repair or replace existing roads, bridges, and other public structures. In addition to those arising from job growth, openings will result from the need to replace civil engineers who transfer to other occupations or leave the labor force.

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CIVIL & ENVIRONMENTAL ENGINEERING AT J.B. SPEED SCHOOL

The civil and environmental engineering curriculum is a five-year program with a cooperative education component, culminating in a Master of Engineering degree recognized by the Accreditation Board for Engineering and Technology (ABET).

As freshmen and sophomores, students develop a solid foundation in engineering design and science principles along with a background in the arts, humanities, and social sciences. Courses include mathematics, physics, chemistry, field measurements, and materials testing. In the third and fourth years, theory and analytical skills are put to practical use during a series of design-oriented classes that emphasize open-ended problems. Three semesters of on-the-job learning through the Cooperative Education Program give students hands-on experience. Research opportunities for upperclassmen and graduate students include projects such as improving aesthetics and reducing potential health hazards in local streams and rivers, assessing earthquake

and flood hazards, preventing roadway collapses by detection of underground cavities, and uses for biosolids from wastewater treatment.

Through the student chapter of the American Society of Civil Engineers, students socialize with classmates and faculty, network with practicing civil engineers, tour industrial sites, and participate in regional professional meetings.

DEPARTMENT HIGHLIGHTS

Three research centers are part of the Civil and Environmental Engineering department. The centers develop partnerships between industry, government agencies and utilities to research, educate, and solve problems and issues in specific areas of civil and environmental engineering.

- Center for Infrastructure Research
- Center for Transportation Innovation
- Institute for Stream Research

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