

# Civil Engineering

As a civil engineer you will plan, design and supervise construction of many essential facilities and structures such as bridges, dams, interstate highways and buildings. Service to the community, its development and improvement are fundamental aspects of a civil engineering career. Civil engineers are problem solvers, applying the latest in high-tech equipment and sophisticated procedures to address challenges concerning our environment and infrastructure.

Civil engineering is a broad field of endeavor. Because of this breadth, courses are required in each of the areas:

- **Environmental engineering** related to the solution of hazardous waste and pollution problems from providing potable and economical water supply systems to maintaining a safe environment.
- **Hydraulics and hydrology** related to water resources, flood control, rainfall, runoff prediction and the transportation of fluids.
- **Geotechnical engineering** related to the bearing capacities of soils, settlement of foundations and the design of both deep and shallow foundations.
- **Structural analysis and design** related to providing reliable and economical structures such as bridges, buildings, port facilities and intricate lock and dam facilities.
- **Transportation systems** related to the movement of people and cargo from place to place, the design of airports, highways and traffic studies to maintain efficient flows.
- **Construction engineering** including work in construction techniques, cost estimating, quality control/ assurance and contract administration as well as the use and property analyses of construction materials such as asphalt, concrete, aggregate, wood, masonry, steel and composite materials.

As a civil engineer you will work with a variety of people. You will learn to communicate with engineers of other fields, specialists and the public. Projects in which you will become involved must be economical, appreciable to self and community and provide a reasonable life expectancy. The results of your work as a civil engineer will be seen everywhere. Being a civil engineer takes discipline and time management, but your rewarding career after graduation will be well worth it!

Missouri S&T's ABET-accredited program combines basic science and engineering principles with a strong emphasis in design and a solid technical knowledge. Students will have the tools necessary to solve civil engineering problems critical to our society's well-being.

## Student Activities

Civil engineering students are involved in a number of activities, including the annual concrete canoe and steel bridge competitions. These activities are sponsored by various regional and national civil engineering organizations and firms, which allow students to meet and interact with potential future employers.

A large and active Engineers Without Borders student chapter annually sends students to Central and South America to design and build engineering projects.

## Top Hiring Employers

Army Corps of Engineers	Anheuser-Busch
Archer Engineers	Argonne National Lab
Burns & McDonnell	Forrester Group
Departments of Transportation	Cantex-Rooney

## Co-op and Internship Availability

Co-op and summer intern programs are available to students. These programs provide students with the opportunity to integrate their classroom studies with learning through productive work experiences in a field related to a student's academic or career goals. Work for a semester or during the summer and build your resume.

## Technical Specialty Areas

Civil engineers may choose an emphasis area in materials engineering, construction engineering, environmental engineering, geotechnical engineering, water resources engineering, structural engineering or transportation engineering as part of their degree program. For more information, see [care.mst.edu](http://care.mst.edu).

## Scholarships

Freshman scholarships are awarded based on high school transcripts and ACT/SAT scores. Numerous named and departmental scholarships ranging from \$200 to \$1,500 are available to all levels of students and are awarded based on academic merit and extracurricular activities as well as financial need.

## Departmental Contact Information

Department Chair:	Dr. William Schonberg
573-341-4461	211 Butler-Carlton Hall
<a href="http://care.mst.edu">care.mst.edu</a>	<a href="mailto:civil@mst.edu">civil@mst.edu</a>

## Faculty

### Professors:

Joel Burken<sup>1</sup>, Ph.D., Iowa (Assoc. Chair)  
 Genda Chen<sup>1</sup>, Ph.D., SUNY-Buffalo  
 William Schonberg<sup>1</sup>, Ph.D., Northwestern (Chair)  
 Richard Stephenson<sup>1</sup>, Ph.D., Oklahoma State (Asst. Chair)  
 Ronaldo Luna<sup>1</sup>, Ph. D., Georgia Tech (Asst. Chair)  
 Daniel Oerther, Ph.D., Illinois  
 Kamal Khayat<sup>1</sup>, Ph.D., California, Berkeley

### Associate Professors:

Jerry Bayless<sup>1</sup>, M.S., Missouri S&T  
 Mark Fitch, Ph.D., Texas (Asst. Chair)  
 Cesar Mendoza, Ph.D., Colorado State  
 Glen Morrison, Ph.D., California, Berkeley  
 John Myers<sup>1</sup>, Ph.D., Texas  
 Charles Morris<sup>1</sup>, Ph.D., Illinois  
 David Richardson<sup>1</sup>, Ph.D., Missouri S&T  
 Stuart Baur<sup>2</sup>, Ph.D., Missouri S&T (Asst. Chair)  
 Timothy Philpot<sup>1</sup>, Ph.D., Purdue  
 Jianmin Wang<sup>1</sup>, Ph.D., Delaware

### Assistant Professors:

Bate Bate, Ph.D., Georgia Tech  
 Jeffrey Volz<sup>1</sup>, Ph.D., Penn State  
 Joon-Ho Choi, Ph.D., Carnegie-Mellon  
 Leslie Sneed<sup>1</sup>, Ph.D., Purdue  
 Ian Prowell<sup>1</sup>, Ph.D., California, San Diego

### Associate Teaching Professor:

William Eric Showalter, Ph.D., Purdue

### Assistant Teaching Professor:

Jeffery Thomas<sup>1</sup>, Ph.D., Missouri S&T  
 Chien-Chung Chen, Ph.D., Penn State

### Lecturer

Dan Abbott, M.S., Missouri S&T

### Emeritus Faculty:

Roger LaBoube<sup>1</sup> (Curators<sup>1</sup>), Ph.D., Missouri S&T  
 John Best<sup>1</sup>, Ph.D., Vanderbilt  
 Franklin Cheng<sup>1</sup> (Curators<sup>1</sup>), Ph.D., Wisconsin  
 Charles Dare<sup>1</sup>, Ph.D., Iowa  
 Ju\_Change Huang<sup>1</sup>, Ph.D., Wisconsin  
 Rodney Lentz, Ph.D., Michigan State  
 Paul Munger<sup>1</sup>, Ph.D., Arkansas  
 Thomas Petry<sup>1</sup>, Ph.D., Oklahoma State  
 Shamsheer Prakash<sup>1</sup>, Ph.D., Illinois  
 Joseph Senne<sup>1</sup>, Ph.D., Iowa State  
 Jerome Westphal<sup>1</sup>, Ph.D., Nevada  
 J. Kent Roberts<sup>1</sup>, Ph.D., Missouri S&T  
 Bobby Wixson, Ph.D., Texas A&M  
 Wei-Wen Yu (Curators<sup>1</sup>), Ph.D., Cornell

Registered Professional Engineer  
 Registered Professional Architect

## Entry Level Job Titles

- Transportation Engineer
- Design Engineer
- Project Engineer
- Environmental Engineer
- Structural Engineer
- Geotechnical Engineer
- Hydraulic Engineer/Hydrological Engineer

## Notes

Detailed information on course equivalencies, acceptable credits for elective coursework, grade requirements and prerequisites is available from S&T's Registrar's Office at [registrar.mst.edu](http://registrar.mst.edu).

All civil engineering students must take the Fundamentals of Engineering Examination prior to graduation. A passing grade is not required; however, this is the first step to becoming a registered professional engineer.

## Bachelor of Science

Civil Engineering ..... 128 credit hours

Entering freshmen desiring to study Civil Engineering are admitted to the Freshman Engineering Program. They may, however, state a Civil Engineering preference, which will be used as a consideration for available freshman departmental scholarships. The focus of the Freshmen Engineering program is on enhanced advising and career counseling, with the goal of providing to the student the information necessary to make an informed decision.

### FIRST YEAR

	Credit
FE 1100-Careers in Engineering.....	1
Chem 1310, 1319-General Chemistry.....	5
Math 1214-Calculus for Engineers I.....	4
Math 1215-Calculus for Engineers II.....	4
English 1120-Exposition.....	3
MechE 1720-Engineering Design .....	3
Physics 1135-Engineering Physics I.....	4
General Ed Elective.....	3
General Ed Elective.....	3
General Ed Elective.....	3
	33

### SECOND YEAR

Civile 2401-Fund of Surveying.....	3
Civile 2003-Engr Communications.....	2
GeoE 1150-Geology for Engineers.....	3
Civile 2200-Engr Mech/Statics.....	3
MechE 2350-Engr Mech/Dynamics .....	2
Civile 2210-Mechanics of Materials.....	3
Civile 2211-Material Test Lab.....	1
Physics 2135-Engineering Physics II .....	4
Stat 3113-Applied Engr Statistics .....	3
Math 2222-Calc w/ Analytic Geometry III.....	4
Math 3304-Differential Equations.....	3
	31

### THIRD YEAR

EMgt 1210-Economic Anal of Engr Design .....	2
Civile 3201-Structural Analysis I.....	3
Civile 3715-Elementary Soil Mechanics .....	3
Civile 3330-Elementary Fluid Mechanics.....	3
Civile 2601-Fund of Environmental.....	3
Civile 3116-Construction Materials.....	3
Civile 3842-Building Systems.....	3
Civile 3500-Transportation Engineering .....	3
Civile 3334-Water Resources Engr.....	4
Civile 3220-Reinforced Concrete Design.....	3
General Ed Elective.....	3
	33

### FOURTH YEAR

Civile 4010-Senior Seminar.....	1
Civile 4448-Contracts & Const Engr.....	3
Civile 3210-Structural Design Metals.....	3
Civile 4097-Civil Engr Design Project.....	3
Civile Tech Elective.....	3
Civile Depth Elective .....	3
Civile Depth Elective .....	3
Civile Depth Elective .....	3
General Ed Elective.....	3
General Ed Elective.....	3
Free Elective .....	3
	31