Civil Engineering

Career Profile

Civil engineering is about community service, development, and improvement. It involves the conception, planning, design, construction, and operation of facilities essential to modern life, ranging from transit systems to offshore structures to space satellites. Civil engineers are problem solvers, meeting the challenges of pollution, traffic congestion, drinking water and energy needs, urban redevelopment, and community planning. Our future as a nation will be closely tied to space, energy, the environment, and our ability to interact with and compete in the global economy.

Accreditation

The South Dakota School of Mines and Technology is accredited by the Higher Learning Commission of the North Central Association of Colleges and Secondary Schools, the recognized accrediting agency for the north central states. In 2006, the HLC voted to continue accreditation of the School of Mines. The School of Mines has been accredited since 1925.

The civil engineering program is also accredited by the Engineering Accreditation Commission of ABET, Inc.

Labs and Facilities

The civil engineering department has separate laboratories equipped for materials testing, fluid flow and hydraulic systems, geotechnical engineering, environmental engineering, structural engineering design, and computer-aided instruction.

Faculty

Chair: Dr. Scott Kenner
Professors: Dr. Sangchul Bang, Dr. M.R. Hansen, Dr. Henry Mott, and Dr. Terje Preber
Associate Professors: Dr. Thomas Fontaine and Dr. Mel Klasi.
Assistant Professors: Ms. Lois Arneson-Meyer, Dr. Lance Roberts, Dr. James Stone, and Dr. Andrea Surovek

Features and Strengths

The small student-to-faculty ratio throughout the programs at the School of Mines fosters relationships between students and professors and allows for a great deal of interaction.

Engineering design applications are integrated throughout the curriculum culminating in a senior design project sponsored by industry, private or government agencies. International senior design opportunities exist and have included projects in Mongolia, Rwanda, Mozamique, and Guatemala.

Program Overview

An undergraduate education in civil engineering is founded on a broad knowledge of engineering sciences and selected courses in mathematics, physical sciences, social sciences, technical communication, and computer methods. Required civil engineering courses address the emphasis areas of environmental, geotechnical, hydraulic, structural, materials, and water resource engineering. Each student is asked to choose one or more of these areas as an emphasis, or they may take one course in each of the areas for a broad-based civil engineering emphasis.

Outcomes

- School of Mines civil engineering graduates received salary offers that average more than $51,000.
- 100 percent of 2005-06 School of Mines civil engineering graduates were placed in their field or entered a graduate program within a year of graduation.
- 80 percent of graduates gain real-life experience through internships and co-ops.
- Companies hiring civil engineering graduates include Kiewit Western, Puget Sound Naval Shipyard, and several state departments of transportation.

Student Organizations

Students at the School of Mines also have a variety of opportunities for extra-curricular activities that range from music, intramurals, and drama to ski and snowboarding clubs, and more than 75 other clubs and professional student organizations. These are important activities for our students and we encourage them to take full advantage of out-of-classroom events. Students in civil engineering are encouraged to participate in the student chapter of the American Society of Civil Engineers (ASCE). The ASCE Student Chapter participates in many activities and competes regionally and nationally.

The Center for Advanced Manufacturing and Production (CAMP) is designed to teach students engineering, science and design skills, as well as the ability to work in teams. Team members design, build, market and raise the money for their projects. All students are welcome to work on CAMP projects.

Research

Students have the opportunity to be involved in research with professors conducting work on projects such as surface and ground water assessment, funded by the United States Department of Agriculture-Forest Service, and use of antimicrobials from CAFOs funded by the National Science Foundation; sediment transport relevant to endangered species habitat restoration, funded by United States Army Corps of Engineers; reclamation of asphalt pavement, funded by the United States Department of Transportation; and more.

Curriculum Listing
http://catalog.sdsmt.edu

CIVIL ENGINEERING CURRICULUM/CHECKLIST

FRESHMAN YEAR

First Semester

ENGL 101	Composition I	3
CHEM 112	General Chemistry I	3
MATH 123	Calculus I	4
GE 130	Professionalism/Engr and Sci	2
PE	Physical Education	1
Humanities or Social Sciences Elective(s)		3
TOTAL		**16**

Second Semester

CHEM 112L	General Chem I Lab	1
CHEM 114	General Chem II	3
PHYS 211	University Physics I	3
MATH 125	Calculus II	4
CEE 117	Computer Aided Design and Interpretation in CEE	2
PE	Physical Education	1
Humanities or Social Sciences Elective(s)		3
TOTAL		**17**

SOPHOMORE YEAR

First Semester

MATH 321	Differential Equations	4
EM 214	Statics	3
CEE 284	Digital Computation in CEE	4
CEE 206	CEE Pract and Eng Surveys I	4
Humanities or Social Sciences Elective(s)		3
TOTAL		**18**

Second Semester

ENGL 279	Technical Communications I	3
MATH 225	Calculus III	4
EM 331	Fluid Mechanics	3
EM 321	Mechanics of Materials	3
Humanities or Social Sciences Elective(s)		3
TOTAL		**16**

JUNIOR YEAR[1]

First Semester

ENGL 289	Technical Communications II	3
CEE 316	Engr and Construct Materials	3
CEE 326	Envr Engr Process Fundament	3
CEE 336	Hydraulic Systems Design	3
CEE 346	Geotechnical Engineering I	3
CEE 353	Structural Theory	3
TOTAL		**18**

Second Semester

PHYS 213	University Physics II	3
Science Elective		3
CEE 327	Intro to Environ Engr Design	3
CEE 337	Engineering Hydrology	3
CEE 347	Geotechnical Engr II	3
One of the following courses:		3
CEE 357	Theory and Design of Metal Structures I[2]	2
CEE 358	Applied Structural Design[2]	
TOTAL		**18**

For More Information contact:
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<http://cee.sdsmt.edu>

SENIOR YEAR

First Semester

IENG 301	Basic Engineering Economics	2
Department Approved Elective[4]		3
CEE 474	Engr Project Management	3
CEE	Track Elective[3]	3
CEE	Approved Elective[4]	3
EM 215	Dynamics **OR**	
ME 221	Dynamics of Mechanisms	3
CEE 464	Civil Engr Capstone Design I	1
TOTAL		**18**

Second Semester

CEE 463	CEE Profession	1
ME 211	Intro to Thermodynamics	3
CEE 465	Civil Engr Capstone DesignII	2
CEE	Track Elective[3]	3
CEE	Approved Elective[4]	3
Humanities or Social Sciences Elective(s)		3
TOTAL		**15**

136 credits required for graduation

Curriculum Notes

[1] In order to enroll in the CEE Junior courses, the student must have at least a C in EM 214 and EM 321.

[2] Structural Engineering emphasis students must choose CEE 357 while students of other emphasis areas may choose CEE 358.

[3] Students have the option of emphasizing in one area selected from either environmental engineering, geotechnical engineering, structural engineering, or water resources engineering where two (2) or more approved courses can be selected. The student can also chose a general engineering option thus selecting a mix of approved elective courses. Track electives for the four focus areas are CEE 426 and CEE 427, CEE 447 and CEE 448, CEE 456 and CEE 457, CEE 433 and CEE 437, respectively.

[4] Approved elective courses must be approved by the Department of Civil and Environmental Engineering. Only one approved elective can be taken at the graduate level.