Environmental engineers design systems and solve pressing global problems in all areas related to the environment and public health: sustainable design of drinking water treatment and wastewater treatment, and solid and hazardous waste disposal systems; development of air quality monitoring and pollution prevention programs; design of site remediation and mining reclamation programs; and development of ecosystem protection and restoration efforts, among others. Students may pursue an environmental engineering education as an emphasis area in the BS Civil Engineering degree program (see http://cee.sdsmt.edu for details), and/or pursue an Environmental Engineering Minor.

Students from any discipline at the School of Mines may pursue a Minor in Environmental Engineering by completing 18 credit hours of coursework as described below.

**REQUIRED CORE COURSES:**

- CBE 217 Material and Energy Balances
- CEE 326 Environmental Engineering 1
- CEE 327 Environmental Engineering 2
- BIOL 341 Microbial Processes in Eng. and Natural Sciences

In addition, students select two 3-credit elective courses from the list below. To ensure that enrollees gain the broad and interdisciplinary background expected in the environmental engineering discipline, one elective must be taken from a discipline outside the student’s major field of study.

- CBE 455 Pollution Phenomena & Process Design
- CEE 426 Environmental Engineering Physical/Chemical Process Design
- CHEM 326 Organic chemistry I
- CHEM 482 Environmental chemistry
- GEOE/CEE 421/521 Aqueous geochemistry
- GEOE 475/575/L Groundwater
- IENG 331 Safety engineering
- MEM 405 Mine Permitting & Reclamation
- MET 220/L Mineral Processing & Resource Recovery

You must fill out the Notification of Intent to Seek a Minor form, with the appropriate signatures and turn it in to the registrar’s office by the beginning of the first semester of your senior year. This is only a sample program of study. For full details please consult the catalog at catalog.sdsmt.edu and the department website.

Program Coordinator: Dr. James Stone
james.stone@sdsmt.edu
605-394-2443
Sustainable engineering describes a new approach for solving complex classes of social problems that result from the rising competition for increasingly limited supplies of resources, water, and land. It seeks to transform engineering practice to meet these challenges. Interdisciplinary in nature and application, sustainable engineering involves the application of life cycle assessment and other innovative techniques to determine the long term implications of a proposed design solutions with the ultimate goal of minimizing overall environmental impacts from products, services, businesses, communities, and nations, as well as create engineering solutions that are fair and just in a global societal context.

REQUIRED CORE COURSES:

Students may pursue a Minor in Sustainable Engineering by completing 18 credit hours of course work that includes two required courses:

- CEE 325 Introduction to Sustainability
- CEE 425 Sustainable Engineering

Six elective credits are selected from the following engineering courses with sustainability content, with a minimum of three credits outside their major:

- CEE 326 Environmental Engineering I
- CEE 337 Engineering Hydrology
- CEE 455/555 Pollution Phenomena & Process Design
- One of the following:
  - IENG 352 Creativity & Innovation
  - IENG 431/531 Industrial Hygiene
  - IENG 451 Operational Strategies
  - IENG 475 Computer-Controlled Mfg. Syst. & Robotics
- GEOE 211 Earth Systems Engineering Analysis
- ME 492 Sustainable Energy
- MET 220 Mineral Processing & Resource Recovery
- MET 310 Aqueous Ext., Concentration & Recycling
- MET 321 High Temp. Ext., Concentration, & Recycling
- MEM 120 Intro. to Mining, Sustainable Dev. & Intro. Mgmt.
- MEM 405 Mine Permitting & Reclamation

Three elective credits are selected from the following list of science or mathematics courses with sustainability content:

- ATM 403/503 Biogeochemistry
- ATM 405/505 Air Quality
- ATM 406/506 Global Environmental Change
- BIOL 311 Principles of Ecology
- BIOL 341 Microbial Syst. in Engr. & Natural Sciences
- GEOL 351 Earth Resources & the Environment
- GEOG 400 Cultural Geography
- MATH 451 Mathematical Modeling

Finally, three elective credit hours are selected from the following list of humanities/social science courses with sustainability content:

- ANTH 210 Cultural Anthropology
- ENGL 300 Literary Experiences of Nature
- HUM 200 Connections: Humanities & Technology
- POLS 250 World Politics
- POLS 407 Environmental Law & Policy

These course requirements provide students with the broad, cross-disciplinary background that leads to the type of interdisciplinary, systems thinking that is essential for developing sustainable solutions.

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