

ENV E Engineering Topics Electives List 2024-2025

According to ABET, the department's accrediting body, engineering topics consist of *engineering sciences and engineering design appropriate to the student's field of study. The engineering sciences have their roots in mathematics and basic sciences but carry knowledge further toward creative application. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other. Engineering design is the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and the engineering sciences are applied to convert resources optimally to meet these stated needs.*

Students may petition the ENVE Curriculum Committee to accept a course not listed below as an engineering topics elective. The petition should explain how the proposed course involves engineering sciences or engineering design appropriate to the student's field of study. **NOTE:** Courses that are listed on more than one electives list can count for only one requirement. The student is responsible for checking and abiding by the ISU catalog relative to official course details, prerequisites and narratives.

Course	CR.	Title	Offered	Notes
ABE 3880 (CE, EE)	3	Sustainable Engineering & International Development	F	Prereq: Junior classification in engineering
ABE 4310/5310 (ENSCI)	3	Design and Evaluation of Soil and Water Conservation Systems	F	Prereq: EM 3780 or CHE 3560
ABE 4320/5320 (ENSCI)	3	Nonpoint Source Pollution and Control	S	Prereq: ABE 4310 or CE 3720
ABE 4370/5370 (ENSCI)	3	Watershed Modeling and Policy	F	Prereq: CE 3720
ABE 4780/5780	3	Wood Frame and Agri-Industrial Structures	Alt. S (odd years)	Prereq: EM 3240
AGRON 4040/5040 (MTEOR, ENSCI, ENVS)	3	Global Change	F, S	
BIOL 4640/EEOB 5640 (ENSCI)	3	Wetland Ecology	F, S, SS	Prereq: 15 credits in BIOL
CE 3320	3	Structural Analysis I	F, S	Prereq: EM 3240
CE 3550	3	Principles of Transportation Engineering	F, S	Prereq: CE 1110
CE 3820	3	Design of Concretes	F, S	Prereq: CE 2740
CE 3880 (ABE, EE)	3	Sustainable Engineering & International Development	F	Prereq: Junior classification in engineering

Course	CR.	Title	Offered	Notes
CE 4130/5130 (ENSCI, GEOL)	3	Applied and Environmental Geophysics	Alt. S (odd years)	
CE 4390/5390 (GEOL)	3	Seismic Methods in Geology, Engineering, and Petroleum Exploration	Alt. S (even years)	
CE 4600	3	Foundation Engineering	F, S	Prereq: CE 3600
CE 4730/5730 (ENSCI)	3	Groundwater Hydrology	F	Prereq: CE 3720
CE 4900/CONE 4900/ ENVE 4900	1-3	Independent Study -- with a contract between the student and instructor	F, S, SS	Maximum of 3 credits applied as Engineering Topics Electives. Prereq: Department Permission
CE 5200 (ENSCI)	3	Environmental Engineering Chemistry	F	Prereq: CE 3260 or CHEM 1780
CE 5210	3	Environmental Biotechnology	F	Prereq: CE 3260
CE 5220 (ENSCI)	3	Water Pollution Control Processes		Prereq: CE 4210 or CE 5210
CE 5230 (ENSCI)	3	Physical-Chemical Treatment Process		Prereq: CE 5200
CHE 2100	3	Material & Energy Balances	F, S	Prereq: CHEM 1780 or MATH 1660 or CHE 1600
CONE 380	3	Engineering Law	F, S	Prereq: Junior classification
CRP 2510	3	Fundamentals of Geographic Information Systems	F	
CRP 2930 (ENVS)	3	Environmental Planning	F, S	
CRP 4510	3	Introduction to Geographic Information Systems	F, S, SS	
CRP 4600/5600	3	Social Justice and Planning	Alt. S (even years)	
CRP 4840/5840 (ENVS)	3	Sustainable Communities	S	Prereq: Junior classification

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CRP 4910 (ENVS, LA)	3	Enviornmental Law and Planning	S	Prereq: 6 credits in natural sciences
EE 3880 (ABE, CE)	3	Sustainable Engineering & International Development	F	Prereq: Junior classification in engineering
EM 4240	3	Intermediate Mechanics of Materials	F, S	Prereq: EM 3240
EM 4250	3	Introduction to the Finite Element Method	S	Prereq: EM 3240, (MATH 2660 or MATH 2670)
EM 5690 (AERE, MSE)	3	Mechanics of Composite & Combined Materials	Alt. S (even years)	Prereq: EM 3240
ENGR 2650	3	Survey of the Impacts of Engineering Activity	F, S	
ENGR 3270	3	Voices of Public Policy	F	Prereq: Sophomore classification in engineering
ENSCI 3240 (GEOL, ENVS, MTEOR)	3	Energy and the Environment	S	Prereq: CHEM 1630 or CHEM 1670 or CHEM 1770
ENSCI 3180 (AGRON, BIOL, NREM)	3	Introduction to Ecosystems	S	Prereq: 12 credits in AECL, AGRON, BIOL, CHEM, FOR, GEOL, NREM
ENSCI 3190 (BIOL, ENVS)	3	Analysis of Environmental Systems	S	Prereq: ENSCI 3120 and junior classification
ENSCI 4020/5020 (GEOL, MTEOR, NREM)	3	Watershed Hydrology	F	
ENSCI 4040/5040 (AGRON, ENVS, MTEOR)	3	Global Change	F, S	
ENSCI 4070/5070 (NREM, ENVS)	4	Watershed Management	S	Prereq: 1 course in BIOL
ENSCI 4110/5110 (GEOL)	4	Hydrogeology	S	
ENSCI 4130/5130 (CE, GEOL)	3	Applied and Environmental Geophysics	Alt. S (odd years)	
ENSCI 4140/5140 (GEOL)	3	Applied Groundwater Flow Modeling	Alt. S (even years)	Prereq: MATH 1650, (GEOL 4110 or CE 4730)

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ENSCI 4160/5160 (GEOL, MTEOR)	3	Hydrologic Modeling and Analysis	Alt. S (odd years)	
ENSCI 4190/5190 (GEOL)	3	Aqueous Environmental Geochemistry	S	Prereq: Junior classification and (CHEM 1780 or CHEM 1780L)
ENVS 3240 (ENSCI, GEOL, MTEOR)	3	Energy and the Environment	S	Prereq: CHEM 1630 or CHEM 1670 or CHEM 1770
ENVS 4040 (AGRON, ENSCI, MTEOR)	3	Global Change	F, S	
ENVS 4070 (ENSCI, NREM)	4	Watershed Management	S	Prereq: 1 course in BIOL
ENVS 4840 (CRP)	3	Sustainable Communities	S	Prereq: Junior classification
GEOL 3240 (ENSCI, ENVS, MTEOR)	3	Energy and the Environment	S	Prereq: CHEM 1630 or CHEM 1670 or CHEM 1770
GEOL 4020/5020 (ENSCI, MTEOR, NREM)	3	Watershed Hydrology	F	
GEOL 4110/5110 (ENSCI)	4	Hydrogeology	S	
GEOL 4130/5130 (CE, ENSCI)	3	Applied and Environmental Geophysics	Alt. S (odd years)	
GEOL 4140/5140 (ENSCI)	3	Applied Groundwater Flow Modeling	Alt. S (even years)	Prereq: MATH 1650, (GEOL 4110 or CE 473)
GEOL 4160/5160 (MTEOR, ENSCI)	3	Hydrologic Modeling & Analysis	Alt. S (odd years)	
GEOL 4390/5390 (CE)	3	Seismic Methods in Geology, Engineering, and Petroleum Exploration	Alt. S (even years)	
IE 3610 (STAT)	3	Statistical Quality Assurance	F, S	Prereq: STAT 2310 or STAT 3010 or STAT 3260 or STAT 5870
MATE 2730	3	Principles of Materials Science and Engineering	F, S	Prereq: MATH 1650, (CHEM 1670 or CHEM 1770)
ME 3320	3	Engineering Thermodynamics II	F, S, SS	Prereq: ME 2310

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ME 3450	3	Engineering Dynamics	F, S	Prereq: CE 2740, credit or enrollment in MATH 2660 or MATH 2670
MTEOR 324 (ENSCI, ENV S, GEOL)	3	Energy & the Environment	S	Chem 163 or Chem 177, Math 140
MTEOR 4040/504 0 (AGRON, ENSCI, ENVS)	3	Global Change	F, S	
POLS 4430/5430	3	Energy Policy	F	Prereq: Sophomore classification
SCM 3010	3	Supply Chain Management		Prereq: ECON 1010
SCM 4600	3	Decision Tools for Logistics and Operations Management		Prereq: SCM 3010
STAT 3610 (IE)	3	Statistical Quality Assurance	F, S	Prereq: STAT 2310 or STAT 3010 or STAT 3260 or STAT 5870