

CEES Professional Electives

Professional Electives are 3000-4000 level undergraduate and 5000 level graduate CEES courses.

Under special circumstances, 3000-5000 level courses from other departments are acceptable professional electives if they are part of a coherent elective program (with faculty advisor approval).

Appropriate electives can be found in: Aerospace Engineering, Architecture, Biological Engineering, Biology, Chemical Engineering, Chemistry, Computer Science, Electrical Engineering, Industrial & Systems Engineering, Mathematics, Mechanical Engineering, Microbiology, Petroleum Engineering, Physics, Statistics, Meteorology, and Geology.

ARCHITECTURAL ENGINEERING

Table 1. Approved Professional Electives and Areas of Emphasis for Bachelor of Science in Architectural Engineering Degree

Geotechnical Engineering	Environmental Engineering	Structural Design	Structural Analysis	Structural Systems	Construction
CEES 5020 (a)	CEES 4243G	CEES 4253G	CEES 4663G	CEES 5073	CEES 4453G
CEES 5313	CEES 4273G	CEES 5020 (d)	CEES 4673	CEES 5653	
CEES 5343	ENGR 4513G	CEES 5020 (e)	CEES 5020 (b)	CEES 5673	
CEES 5353		CEES 5693	CEES 5020 (c)	CEES 5763	
CEES 5404		CEES 5753	CEES 5723		
CEES 5413		CEES 5773	CEES 5970		
CEES 5423		CEES 5783			
CEES 5433		CEES 5793			
CEES 5693					

Course No.	Title	Course No.	Title
CEES 4243G	Water Technologies for Emerging Regions	CEES 5404	Soil Stabilization
CEES 4253G	Statistics and Probability	CEES 5413	Soil-Structure Interaction
CEES 4273G	WaTER Technical Field Methods	CEES 5423	Environmental Geotechnology
CEES 4453G	Geomatics	CEES 5433	In Situ Soil Testing
CEES 4663G	Matrix Methods of Structural Analysis	CEES 5653	Advanced Mechanics of Materials
CEES 4673	Structural Analysis II	CEES 5673	Dynamics of Structures
CEES 5020 (a)	Computer Methods in Geotechnical Eng	CEES 5693	Structural Design of Pavements
CEES 5020 (b)	Plastic Analysis of Structures	CEES 5723	Experimental Analysis of Structures
CEES 5020 (c)	Structural Stability	CEES 5763	Introduction to Finite Element Method
CEES 5020 (d)	Bridge Engineering Fundamentals	CEES 5773	Steel II
CEES 5020 (e)	Structural Reliability	CEES 5783	Concrete II
CEES 5313	Engineering Geology	CEES 5793	Design of Prestressed Concrete Structures
CEES 5343	Advanced Soil Mechanics	CEES 5970	Structural Analysis II
CEES 5353	Introduction to Soil Dynamics	ENGR 4513G	Intro. to Sustainable Engineering

CEES Professional Electives

CIVIL ENGINEERING

Table 2. Approved Professional Electives and Areas of Emphasis for Bachelor of Science in Civil Engineering Degree

Geotechnical Engineering	Environmental Engineering	Structural Design	Structural Analysis	Structural Systems	Construction
CEES 4333G	CEES 4114	CEES 4753G	CEES 4663G	CEES 5073	CEES 3453
CEES 5020 (a)	CEES 4123G	CEES 5020 (e)	CEES 4673	CEES 5653	
CEES 5313	CEES 4234	CEES 5693	CEES 5020 (b)	CEES 5673	
CEES 5323	CEES 4243G	CEES 5753	CEES 5020 (c)	CEES 5763	
CEES 5333	CEES 4263G	CEES 5773	CEES 5723		
CEES 5343	CEES 4273G	CEES 5783	CEES 5970		
CEES 5353	CEES 4943	CEES 5793			
CEES 5404	CEES 5363				
CEES 5413	CEES 5283				
CEES 5423	CEES 5423				
CEES 5433	CEES 5673				
CEES 5693	CEES 5833				
	CEES 5843				
	CEES 5853				
	CEES 5883				
	ENGR 4513G				

Course No.	Title	Course No.	Title
CEES 3453	Introduction to Construction Management	CEES 5353	Introduction to Soil Dynamics
CEES 4114	Aquatic Chemistry	CEES 5404	Soil Stabilization
CEES 4123G	Open Channel Flow	CEES 5413	Soil-Structure Interaction
CEES 4234	Applied Environmental Microbiology	CEES 5423	Environmental Geotechnology
CEES 4243G	Water Technologies for Emerging Regions	CEES 5433	In-Situ Soil Testing
CEES 4273G	WaTER Technical Field Methods	CEES 5653	Advanced Mechanics of Materials
CEES 4333G	Foundation Engineering	CEES 5673	Colloid Surface Science
CEES 4663G	Matrix Methods in Structural Analysis	CEES G5673	Dynamics of Structures
CEES 4753G	Structural Design - Wood	CEES 5693	Structural Design of Pavement
CEES 4943	Air Quality	CEES 5723	Experimental Analysis of Structures
CEES 5020 (a)	Computer Methods in Geotechnical Eng	CEES 5763	Introduction to Finite Element Method
CEES 5020 (b)	Plastic Analysis of Structures	CEES 5773	Structural Design – Steel II
CEES 5020 (c)	Structural Stability	CEES 5783	Structural Design – Concrete II
CEES 5020 (d)	Bridge Engineering Fundamentals	CEES 5793	Design of Prestressed Concrete Structures
CEES 5020 (e)	Structural Reliability	CEES 5833	Ground Water Quality Protection
CEES 5283	Environmental Organic Chemistry	CEES 5843	Hydrology
CEES 5313	Engineering Geology	CEES 5970	Structural Analysis II
CEES 5323	Geosynthetics	ENGR 4513G	Intro. to Sustainable Engineering
CEES 5343	Advanced Soil Mechanics		
CEES 5363	Ecological Engineering Science		

CEES Professional Electives

ENVIRONMENTAL ENGINEERING

Table 3. Approved Professional Electives and Areas of Emphasis for Bachelor of Science in Environmental Engineering Degree

Water Supply & Resources	Environmental Systems Modeling	Environmental Chemistry and Biology	Wastewater Management	Solid & Hazardous Waste Management	Construction
CEES 4123G	CEES 5883	CEES 4473	CEES 4123G	CEES 5423	CEES 3453
CEES 4243G	ENGR 4510	CEES 5283	CEES 4324	CEES 5343	CEES 4453G
CEES 4273G	MATH 4753	CEES 5363	CEES 5244		
CEES 5833		CEES 5673	CEES 5624		
CEES 5843					
CEES 5853					
CEES 5873					

1. One elective can be chosen from list of approved science electives.

Course No.	Title	Course No.	Title
CEES 3453	Introduction to Construction Management	CEES 5423	Environmental Geotechnology
CEES 4123G	Open Channel Flow	CEES 5343	Advanced Soil Mechanics
CEES 4243G	Water Technologies for Emerging Regions	CEES 5624	Biological Waste Treatment
CEES 4273G	WaTER Technical Field Methods	CEES 5673	Colloid and Surface Science
CEES 4324	Environmental Biology and Ecology	CEES 5833	Ground Water Quality Protection
CEES 4453G	Geomatics	CEES 5843	Hydrology
CEES 4473	Soil Science	CEES 5853	Ground Water and Seepage
CEES 5283	Environmental Organic Chemistry	CEES 5873	Water Quality Management
CEES 5363	Ecological Engineering Science	CEES 5883	Environmental Modeling

CEES Professional Electives

ENVIRONMENTAL SCIENCE

The BS in Environmental Science degree requires three CEES professional electives (CEES 3000-5000 level) and three track electives. Start thinking about your track options early, since many courses from other departments are offered once a year or irregularly and may have additional prerequisites that are not included in your BS in Environmental Science degree requirements.

Suggested CEES Professional Electives:

CEES 4243	Water Technologies for Emerging Regions	CEES 5853	Ground Water Seepage
CEES 4423	Professional Internship (prior instructor permission)	CEES 5873	Ground Water Quality Protection
CEES 4473	Soil Science	CEES 5883	Environmental Modeling
CEES 4453G	Geomatics Engineering	CEES 5273	Wetland Science and Management
CEES 4980	Senior Research	CEES 5363	Ecological Engineering Science
CEES 5020	Special Topics (instructor permission)	CEES 5283	Environmental Organic Chemistry
CEES 5600	ES Special Topics (instructor permission and 3.0 GPA)	ENGR 4513	Introduction to Sustainable Engineering

Students must choose 9 hours from one of the 7 track options below:

1. Biological/Ecological Sciences
2. Chemical Sciences
3. Earth and Atmospheric Sciences
4. Geography/Geographic Information Systems
5. Environmental Planning and Management
6. Mathematics and Computer Science
7. Premedical

Track 1: Biological/Ecological Sciences

Must be courses offered in the following departments: Biology (BIOL) or Microbiology and Plant Biology (MBIO and P BIO). One biological sciences related course may be chosen from another department, if approved by the student's faculty advisor.

At least six credit hours must be upper division (3000-level or higher).

Track 2: Chemical Sciences

Must be courses offered in the following departments: Chemistry & Biochemistry (CHEM). One chemistry related course may be chosen from another department, if approved by the student's faculty advisor. *At least six credit hours must be upper division (3000-level or higher).*

Track 3: Earth and Atmospheric Sciences

Must be courses chosen from the following departments: Geology and Geophysics (GEOL) or Meteorology (METR). One earth or atmospheric science related course may be chosen from another department, if approved by the student's faculty advisor.

At least 3 credit hours must be upper division (3000-level or higher).

Track 4: Geography/Geographic Information Systems

Must be courses chosen from the following departments: Geography and Environmental Sustainability (GEOG or GIS). One related course may be chosen from another department, if approved by the student's faculty advisor. *At least 6 hours must be upper division (3000-level or higher).*

Track 5: Environmental Planning and Management

Must be courses from the following list: ECON1123, ECON3213, PSC3233, IPE3213, GEOG3233, PHIL3293, RCPL4003, COMM1113, COMM3483, COMM3513, COMM4513, and ENGR4513 (semester offerings vary). Other courses may be chosen from these or related departments, if approved by the student's faculty advisor. *At least 6 hours must be upper division (3000-level or higher).*

Track 6: Mathematics and Computer Science

Must be courses from the following list: MATH2934, MATH3113, MATH3333, MATH3413, MATH3401, CS1313, ENGR3411, and ENGR3723 (semester offerings vary). Other courses may be chosen from these or related departments, if approved by the student's faculty advisor.

At least one course must be upper division (3000-level or higher).

Track 7: Premedical

Must include at least 3 chemical, physical, or life science courses that are required or recommended for medical school admission, and that are not already required for the ES major. Written documentation that these 3 courses are part of a plan for medical school application must be obtained from the Premedical Professions Advising Office. *Please consult with OU Premed Advising Office for medical school admission requirements:*

Cate 1, room 415-416 or by appointment only: <http://iadvise.ou.edu>