



GALLOGLY COLLEGE OF ENGINEERING
SCHOOL OF CIVIL ENGINEERING
AND ENVIRONMENTAL SCIENCE
The UNIVERSITY of OKLAHOMA

Undergraduate Student Handbook for Architectural, Civil, and Environmental Engineering Students

Fall 2024

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The Engineering Accreditation Commission (EAC) of ABET requires accredited engineering programs to publish their Mission Statement, Student Outcomes and Program Educational Objectives.

Civil Engineering

Bachelor of Science in Civil Engineering accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Civil and Similarly Named Program Criteria.

Environmental Engineering

Bachelor of Science in Environmental Engineering accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Environmental Engineering and Similarly Named Program Criteria.

Architectural Engineering

Bachelor of Science in Architectural Engineering accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and the Architectural and Similarly Named Program Criteria.

MISSION STATEMENT

Through a community of scholars committed to excellence in research and teaching, the mission of CEES is to provide our students with the technical education and critical thinking skills needed to lead the country in addressing the complex infrastructure and environmental problems facing today's society.

PROGRAM EDUCATIONAL OBJECTIVES

Program educational objectives (PEOs) are broad statements that describe what graduates are expected to attain within a few years of graduation. The PEOs were developed to meet the needs of the constituencies of CEES. The primary constituents of CEES programs are our students, alumni, and employers that hire our graduates. The PEO's are focused on providing well trained engineers for employers and to empower those engineers to advance during their careers. The PEOs for CEES engineering graduates are:

Program Educational Objective 1: CEES alumni will embark on successful careers in areas associated with the development, implementation, and management of architectural, civil, and environmental engineering systems, or will continue their education through graduate or professional school.

Program Educational Objective 2: CEES alumni will advance in their careers by employing the latest technical knowledge, creativity, inclusive teamwork, and ethical decision making to find sustainable solutions for pressing environmental and infrastructure problems; they will continue their professional development through lifelong learning; and they will support the profession and the University.

STUDENT OUTCOMES

Student Outcomes describe what students are expected to know and be able to do by the time of graduation. The Student Outcomes for engineering students in CEES are:

- (1) an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- (2) an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- (3) an ability to communicate effectively with a range of audiences
- (4) an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- (5) an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- (6) an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- (7) an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

1.0 ACADEMIC PROGRAM PLANNING

Once students enroll in CEES courses, they will be assigned a faculty member to serve as a faculty advisor. They can help prepare an academic program plan, select courses, and offer advice on other matters. Students are encouraged to discuss questions regarding a specialty area within the school with a faculty member in that discipline. ***Students*** should assume the primary responsibility for planning a coherent academic program that achieves their educational objectives and satisfies the requirements for graduation. A list of faculty advisor assignments can be found here:

www.ou.edu/coe/cees/undergrad_programs/student_resources/advising

Students graduating from CEES must meet several criteria. The requirements for the Bachelor of Science in Architectural Engineering (130 hours), Bachelor of Science in Civil Engineering (126 hours) and Bachelor of Science in Environmental Engineering (125 hours) are located at the back of this handbook. In order to graduate, students must successfully complete semester hours noted (plus language requirement if applicable), with a minimum retention grade point average of 2.00 in all OU courses, all courses taken anywhere, all major (at OU & combined) courses and all courses required for the Bachelor of Science degree. In addition, students must have a minimum “C” grade in every course offered for the degree.

Students must be admitted to the Gallogly College of Engineering to enroll in all ENGR and CEES courses numbered 3000 or greater, as well as in English 3153 (Technical Writing). For Gallogly College of Engineering admission requirements, refer to “Policy on Admission of Undergraduate Students” in the current OU General Catalog.

It is the responsibility of the **student** to follow the course requirements for graduation, but advisors will help based on their knowledge at the time of each advising conference. Advisors can assist students in optimizing their learning experiences at OU. Failure to follow the advisor's recommendations can prolong the time required to earn a degree and result in probation and suspension. Advisors have the authority to withhold approval if selected courses are inappropriate or unwise. Remember that both course and grade prerequisites are necessary for every course.

1.1 Accelerated BS/MS Degree

The combined BS/MS program is offered to qualified-undergraduate students in CEES who wish to pursue their graduate education while completing their undergraduate degree requirements. Students accepted into the combined BS/MS program can apply up to nine credit hours to simultaneously satisfy the requirements of both the BS and MS degrees. With proper planning, students can initiate the thesis research option or the coursework only option and complete the MS in one additional year beyond their BS degree. Architectural Engineering majors will receive a BS in Architectural Engineering and MS in Civil Engineering through this program. Students interested in pursuing the combined BS/MS program are encouraged to inquire about eligibility with their advisor. The CEES Graduate Liaison will accept Accelerated Degree Plan (ADP) applications within the first two weeks of the fall and spring semesters. The ADP application, submission deadlines, and additional program details can be found here: www.ou.edu/coe/cees/undergrad_programs/accelerated_mastersprogram

1.2 Minor in Environmental Science

CEES offers a Minor in Environmental Science because all students in the scientific disciplines can benefit from gaining basic knowledge of environmental science. Earning a Minor in Environmental Science will allow these students to round out their academic strengths and will create scientists and professionals who will be able to practice in their primary disciplines while participating in environmental science problem solving.

The Minor in Environmental Science is available to students in good academic standing in the following majors:

- Bachelor of Science in Engineering (excluding Environmental Engineering)

- Bachelor of Architecture

- Bachelor of Science in Construction Science

- Bachelor of Science in Astronomy, Astrophysics, Biochemistry, Botany, Chemistry, Health and Sport Sciences, Mathematics, Microbiology, Physics, Psychology, Zoology

- Bachelor of Science in Education (Mathematics, Science)

- Bachelor of Science in Geography, Geology, Geophysics, Geosciences, Meteorology

- Other majors on a case-by-case basis

Students must have completed the following courses satisfactorily prior to application:

MATH 1823/1914 and MATH 2423/2924
CHEM 1315 and CHEM 1415
BIOL 1134 or PBIO 1114
PHYS 2514 or PHYS 2414

Sixteen credit hours are required to complete the minor, including the following CEES courses:

CEES 2313 Water Quality Fundamentals (F)
CEES 2323 Environmental Transport and Fate Processes (Sp)
CEES 4263G Hazardous and Solid Waste Management (F)
CEES 4114/5114 Aquatic Chemistry or CEES 4324/5324 Environmental Biology and Ecology (F)

Plus, one from the following list (may require additional pre-requisites):

CEES 4243 Water Technologies for Emerging Regions (Sp)
ENGR 4513 Introduction to Sustainable Engineering (Sp)
Or another CEES 4000 or 5000-level course with permission from advisor

1.3 Minor in Water and Sanitation for Health and Sustainable Development

Also called the WaTER Minor, this degree was developed by the OU Water Technologies for Emerging Regions (WaTER) Center in collaboration with colleagues from across the OU campus. The minor is designed for engineering and non-engineering majors who have an interest in development work in emerging regions, particularly in the sections of water, sanitation, and health. The Minor will:

Prepare students for work in international development as participants and leaders in Peace Corps, USAID, the U.S. Dept. of State, and service organizations such as Engineers Without Borders and WaterAID.

Increase the awareness of tomorrow's societal leaders on the specific challenges and opportunities facing developing countries, including Water, sanitation, and hygiene (WASH).

Students seeking to pursue the WaTER Minor must:

Complete a short application and, if accepted, arrange an advisory meeting to determine appropriate coursework

Submit a one-page essay in response to the question: "Why I wish to pursue the WaTER minor".

Have a GPA of at least 2.75

Be an OU student of any major

1.4 Williams Student Services Center (FH 112)

The Williams Student Services Center (WSSC), located in Felgar Hall, Room 112, assists students with the following matters:

- retention
- transfer equivalencies (for lower division courses)
- repeat/forgiveness policy
- general education questions
- appropriate curriculum
- petitions to add/drop
- suspension petitions
- complete withdrawal
- Degree Navigator corrections/updates
- graduation verification
- general OU policy information
- general assistance if students don't know where to go

1.5 Transfer Students

Students transferring into CEES may notice that the degree audit in Degree Navigator has placed courses into a category at the end called “excess coursework”. It is possible that some of this coursework can be applied towards the degree. Please contact an advisor in WSSC for the correct procedure to request a review.

1.6 Graduating Seniors

There is no formal degree check application to submit; however, graduating seniors are encouraged to review their academic standing at <https://degree.ou.edu> the semester **BEFORE** they plan to graduate and contact WSSC if anything is missing. Details about when students will receive their diploma can be found at www.ou.edu/registrar/graduation/diplomas

Students must apply for graduation the semester **BEFORE** their intended graduation semester by the deadline below. The graduation application can be found at www.ou.edu/registrar/graduation

Fall: December Graduation - May 1

Spring: May Graduation - December 1

Summer: August Graduation - February 1

All students must complete a CEES exit interview before graduation. The department will schedule appointments in the final month of each semester, in accordance with student class schedules.

Questions about OU Alumni email? Students are encouraged to check out the alumni resources at the OU Career Center, [-https://www.ou.edu/career/alumni](https://www.ou.edu/career/alumni), and the OU Alumni Association, tinyurl.com/ou-alumniassociation

2.0 STUDENT ADVISING AND ADVANCE REGISTRATION

If a student has been admitted to the Gallogly College of Engineering, meets current retention standards, and has no unpaid fines, overdue books, or parking tickets they can participate in advance registration. Advance registration for fall and summer semesters is held during the preceding spring semester, and advance registration for the spring semester is held during the preceding fall semester. With a few exceptions, advance registration is conducted according to classification and in varying alphabetical order of students' last names. Students can view their registration window at ONE.ou.edu, under the "Academics" tab, and select the "Enrollment" heading. Students can also view any holds on their account.

Prior to the advance registration period, CEES holds group advising sessions for all CEES undergraduate students. Group advising periods are scheduled each semester. Students should check their email or inquire in CEC 334 for the schedule. **Students who do not attend one of the group advising sessions FOREFIT their opportunity to register during the advance registration period and will only be advised once freshmen begin enrolling.**

Follow the steps below to schedule an advising appointment.

1. Login to <https://iadvise.ou.edu>
2. Select 'Departmental Level Advising' and then 'Make Group Appointment'.
3. Choose the desired group advising session and select the corresponding 'Make Reservation' button to sign up
4. Add a phone number and finalize the appointment by selecting 'Make Reservation'
5. Verification of a successful reservation will appear; students will be sent an email confirmation of the appointment

Students must sign up for a specific date and time using iAdvise. Students who do not sign up through iAdvise cannot be guaranteed advisement on a walk-in basis. Failure to check-in during scheduled advisement time may result in loss of appointment time.

Next, follow these steps:

1. Attend **group advising** and visit with both a WSSC academic advisor and a CEES faculty member. Advising holds will be lifted after.
2. Special problems or circumstances may necessitate students scheduling an appointment with their faculty advisor after attending group advising. **All CEES students are assigned a faculty advisor who can answer questions in between group advising sessions.** Feel free to contact assigned faculty advisors for an appointment. A list of faculty advisors can be found here:
www.ou.edu/coe/cees/undergrad_programs/student_resources/advising

Students who need an override for a CEES or ENGR class, must email the course instructor with cc: to cees@ou.edu with the following information:

1. Student name
2. Student OU ID number
3. Course number
4. Section number (3-digits)
5. Course name
6. Screen shot of the enrollment error message

Students must obtain special permission for ENGL 3153 from the English Department.

Before enrolling in any course, students should determine that they satisfy the course prerequisites. The CEES curriculum checksheets can be found at <https://www.ou.edu/checksheets>. Prerequisites are enforced for all classes. Students will be administratively removed from any course they enroll in without the required prerequisites. Remember that a minimum “C” grade is required in all courses and is a part of the prerequisite.

All students must take one of the following capstone courses prior to graduation: CEES 4993 (AE Capstone), CEES 4903 (CE Capstone) or CEES 4923 (EE Capstone). All three courses are offered only in the spring semester and must be taken by students scheduled to graduate that spring semester or the subsequent summer or fall semesters. Students planning to graduate in the summer or fall semesters must have completed 90 credit hours of the Architectural, Civil, or Environmental Engineering curricula prior to enrolling in their capstone course. All engineering students enrolling in their capstone course are required to attempt the Fundamentals of Engineering (FE) examination during the semester in which they plan to graduate.

All prerequisites must be met to enroll in capstone senior design courses. Following is a list of prerequisites by major.

Architectural Engineering

AME 4653	Air Conditioning Systems
CEES 3663	Structural Design-Steel I
CEES 3673	Structural Design-Concrete I
CEES 4113	Building Lighting and Electrical Systems
CEES 4333G	Foundation Engineering
CEES 4991	Intro to AE Capstone

Civil Engineering

CEES 3213	Water Resources Engineering
CEES 3363	Soil Mechanics
CEES 3663	Structural Design-Steel I <u>OR</u> CEES 3673 Structural Design-Concrete I
CEES 4901	Intro to CE Capstone

Environmental Engineering

CEES 3213	Water Resources Engineering
CEES 4114	Aquatic Chemistry
CEES 4253G	Statistics and Probability
CEES 4324	Environmental Biology and Ecology
CEES 4921	Intro to EE Capstone

3.0 CEES PROFESSIONAL ELECTIVES

CEES has three engineering degree programs: architectural, civil, and environmental. Within the civil and environmental engineering programs, there are different areas of emphasis. Students can use professional electives within the civil or environmental engineering curricula to focus on areas to obtain either a general or specialized background. Both paths have merits.

Selecting electives from several areas will give students a chance to explore various fields before choosing a specialty. Few engineers follow a single track throughout their careers; changes to new areas are common and a broad education allows easy transition. For the student who desires a general civil engineering career, a broad background is usually required to satisfy the varied demands. Also, most civil engineering projects encompass many areas of design. A general background helps communicate across specialty lines. Specialization may be the choice for those students who have clearly defined career goals and want to focus on one area only. By selecting courses in a single area, it is possible to be well qualified for a position within a particular field with only a BS degree. In addition, specialization can provide impressive qualifications and capabilities for graduate study.

CEES suggests that students carefully consider both the generalization and specialization options and consult with faculty, practicing engineers, and their advisor before deciding. Whatever path chosen, please recognize that focus in the selection of electives is desirable. There is no wisdom in a random selection of professional electives.

CEES professional electives are any CEES 3000-level junior, 4000-level senior, and 5000-level graduate courses. These electives require science or CEES core course prerequisites. Make certain the appropriate course and grade prerequisites for each professional elective.

University regulations and CEES policy impose restrictions when selecting professional electives. No 6000-level courses can be taken by undergraduate students, nor can 5000-level courses be taken by students with junior standing. Also, correspondence courses and the generic course, CEES 5020—Special Topics in CEES, are unacceptable as professional electives.

3.1 Architectural Engineering (Table 1)

Architectural engineers design buildings and other structures, but the design of a building involves far more than its appearance. Buildings also must be functional, safe, and economical and must suit the needs of the people who use them. Architectural engineers consider all these factors when they design buildings and other structures. Architectural engineers design a wide variety of buildings, such as office and apartment buildings, schools, churches, factories, hospitals, houses, and airport terminals. They also design complexes such as urban centers, college campuses, industrial parks, and entire communities. In addition, they may advise on the selection of building sites, prepare cost analysis and land-use studies, and do long-range planning for land development.

Architectural engineers develop final construction plans that show the building's appearance and details for its construction. Accompanying these plans are drawings of the structural system; air-conditioning, heating, and ventilating systems; electrical systems; communications systems; plumbing; and, possibly, site and landscape plans. Although they have traditionally used pencil and paper to produce design and construction drawings, architectural engineers are increasingly turning to computer-aided design and drafting (CADD) technology for these important tasks.

3.2 Civil Engineering Electives (Table 2)

Civil engineering is the oldest of the modern engineering disciplines with historical roots dating back to the 1700s. Responsibilities of the first civil engineers increased during the industrial revolution and included the construction of canals, roads, and railroads.

Civil engineers are responsible for the design and construction of society's infrastructure, such as buildings, highways, bridges, mass transit systems, dams and locks, and municipal water and sewage treatment systems. They often are responsible for planning, managing, operating, and maintaining these facilities. Consequently, civil engineering is frequently referred to as "the people-serving profession."

Spurred by general population growth and an expanding economy, more civil engineers will be needed to design and construct higher-capacity transportation, water supply and pollution control systems as well as large buildings and building complexes. They also will be needed to repair or replace existing roads, bridges, and other public structures.

3.2.1 Geotechnical Engineering Emphasis

Geotechnical engineering relates to the behavior of structures, foundations, and geologic media such as soils and rocks. The geotechnical engineer designs earth and rock-filled dams, levees, tunnels, braced excavations, and structural foundations. This field leads to careers in analysis, design, construction and maintenance of structural foundations, pavements, tunnels, dams, and other facilities; and, also in material testing and general civil engineering consultant works. Graduates typically work for consulting firms, state departments of transportation and government organizations.

3.2.2 Structural Engineering Emphasis

Structural engineering involves the analysis, design and construction of buildings, bridges, offshore platforms, and other facilities. Structural engineers select the appropriate materials and ensure that the structure will have sufficient strength and stiffness to fulfill its intended purpose. Careers are available in structural analysis and design, general civil engineering consulting work, and construction. Graduates are frequently employed by private companies, architecture firms, and government agencies.

3.2.3 Water Resources Engineering Emphasis

Civil engineers are generally charged with developing the infrastructure needed to provide safe drinking water and wastewater collection and treatment systems. Water resources engineering can involve the design of dams, pipelines, water treatment plants, water distribution systems, and storm water control and flood prevention systems. Wastewater treatment engineers design sewage collection systems and wastewater treatment facilities. Graduates are frequently employed by government agencies and private companies.

3.3 Environmental Engineering Electives (Table 3)

Environmental engineering began with the demand for better water and wastewater treatment technologies. Later, the field expanded to include hydro-mechanics processes, hydrology, and water resources engineering. Today, environmental impact assessment and pollution control are also included. In CEES, we also work in hazardous and solid waste management and disposal. Careers are available in water resources (groundwater and reservoir development), water treatment, sewage treatment, industrial waste management and solid and hazardous waste management. Graduates typically work for federal, state, and local governments, consulting firms and industry.

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	Transportation Engineering and Construction
CEES 5313	CEES 4273G	CEES 4253G	CEES 4663G	CEES 5653	CEES 3453
CEES 5343	ENGR 4513G	CEES 5693	CEES 5663	CEES 5683	
CEES 5353		CEES 5773		CEES 5763	
CEES 5413		CEES 5783			
CEES 5433		CEES 5793			
CEES 5693					

Course No.	Title	Course No.	Title
CEES 3453	Intro to Construction Management	CEES 5653	Advanced Mechanics of Materials
CEES 4253G	Statistics and Probability	CEES 5663	Structural Analysis II
CEES 4453G	Geomatics Engineering	CEES 5683	Dynamics of Structures
CEES 4663G	Matrix Methods in Structural Analysis	CEES 5693	Structural Design of Pavements
CEES 5313	Engineering Geology	CEES 5763	Intro to Finite Element Method
CEES 5343	Advanced Soil Mechanics	CEES 5773	Structural Design - Steel II
CEES 5353	Intro to Soil Dynamics	CEES 5783	Structural Design - Concrete II
CEES 5313	Engineering Geology	CEES 5793	Design of Prestressed Concrete Structures
CEES 5413	Soil-Structure Interaction	ENGR 4513G	Intro to Sustainable Engineering
CEES 5433	In-Situ Soil Testing		

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	Transportation Engineering and Construction
CEES 4333G	CEES 4114/5114	CEES 4753G	CEES 4663G	CEES 5653	CEES 3453
CEES 5313	CEES 4123G	CEES 5693	CEES 5663	CEES 5673	CEES 4453G
CEES 5323	CEES 4263G	CEES 5753		CEES 5763	
CEES 5333	CEES 4273G	CEES 5773			
CEES 5343	CEES 4373/5373	CEES 5783			
CEES 5353	CEES 4943				
CEES 5413	CEES 5283				
CEES 5433	CEES 5363				
CEES 5693	CEES 5673				
	CEES 5833				
	CEES 5843				
	CEES 5853				
	CEES 5883				
	ENGR 4513G				

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

Course No.	Title	Course No.	Title
CEES 3453	Intro to Construction Management	CEES 5413	Soil-Structure Interaction
CEES 4114/5114	Aquatic Chemistry	CEES 5433	In-Situ Soil Testing
CEES 4123G	Open Channel Flow	CEES 5653	Advanced Mechanics of Materials
CEES 4333G	Foundation Engineering	CEES 5663	Structural Analysis II
CEES 4373/5373	Water Resources Systems Modeling	CEES 5673	Colloid Surface Science
CEES 4663G	Matrix Methods in Structural Analysis	CEES 5673	Dynamics of Structures
CEES 4753G	Structural Design - Wood	CEES 5693	Structural Design of Pavement
CEES 4943	Air Quality	CEES 5763	Introduction to Finite Element Method
CEES 5283	Environmental Organic Chemistry	CEES 5773	Structural Design – Steel II
CEES 5313	Engineering Geology	CEES 5793	Design of Prestressed Concrete Structures
CEES 5323	Geosynthetics	CEES 5833	Ground Water Quality Protection
CEES 5343	Advanced Soil Mechanics	CEES 4843/5843	Hydrology
CEES 5353	Introduction to Soil Dynamics	CEES 5383	Earthquake Engineering
CEES 5363	Ecological Engineering Science	ENGR 4513G	Intro. to Sustainable 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	Transportation Engineering and Construction
CEES 4123G	CEES 5883	CEES 5283	CEES 4123G	CEES 5423	CEES 3453
CEES 4243G	MATH 4753G	CEES 5363	CEES 4324G	CEES 5343	CEES 4453G
CEES 4273G		CEES 5673	CEES 5244		
CEES 4373/5373			CEES 5624		
CEES 5833					
CEES 4843/5843					
CEES 5873					

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

Course No.	Title	Course No.	Title
CEES 3453	Intro to Construction Management	CEES 5673	Colloid and Surface Science
CEES 4123G	Open Channel Flow	CEES 5833	Ground Water Quality Protection
CEES 4324/5324	Environmental Biology and Ecology	CEES 4843/5843	Hydrology
CEES 4373/5373	Water Resources Systems Modeling	CEES 5853	Groundwater and Seepage
CEES 4453G	Geomatics Engineering	CEES 5873	Water Quality Management
CEES 5283	Environmental Organic Chemistry	CEES 5883	Environmental Modeling
CEES 5363	Ecological Engineering Science	MATH 4753G	Applied Statistical Methods
CEES 5624	Biological Waste Treatment		

3.4 Professional Electives Outside of CEES

Under special circumstances, junior, senior, and graduate courses from other departments are acceptable professional electives if they are part of a coherent elective program. Such courses must be approved by an advisor.

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

3.5 CEES Professional Internship

Students who intend to fulfill a professional elective with an internship **MUST HAVE PRIOR APPROVAL** from the internship course instructor. The following syllabus outlines the internship requirements and steps to obtain approval but is subject to change.

CEES 4423 – CEES Professional Internship
School of Civil Engineering and Environmental Science
Fall Semester Only

Catalog Description: Prerequisite: Completion of at least 19 hours of Civil Engineering and Environmental Science (CEES) coursework (for Civil Engineering and Environmental Engineering majors); or completion of at least 19 hours of CEES and/or science coursework (for Environmental Science majors); or completion of at least 19 hours of CEES and/or Architecture (ARCH) coursework (for Architecture Engineering majors). Provides three hours of professional elective credit for 400 hours of internship. Prior to starting the internship, students should consult with the CEES internship program advisor, write a proposal of planned activities, and secure the approval of the advisor. On completion of the internship, the students should enroll in this course, attend weekly sessions, submit a report, and make an oral presentation to the CEES internship program advisor and selected audience. (F)

Textbooks: None required

Internship Program Advisor: Dr. Robert C. Knox

Prerequisites: Completion of at least 19 hours of Civil Engineering and Environmental Science (CEES) coursework (for Civil Engineering and Environmental Engineering majors); or completion of at least 19 hours of CEES and/or science coursework (for Environmental Science majors); or completion of at least 19 hours of CEES and/or Architecture (ARCH) coursework (for Architecture Engineering majors).

Course Outline:

1. Project – The student must first secure an internship, then consult with the CEES internship program advisor and determine if this internship meets the requirements for professional elective credits. To meet the requirements, the set of activities that the student expects to complete during their internship must contain higher-level engineering or science work such that the sum of the experiences for the internship is equivalent to what a student would learn in a three-credit, upper division CEES course. In addition, the internship supervisor must agree in writing to prepare a minimum of two intern evaluation/progress reports over the course of the internship. The reports can be in the form of an email or letter to the CEES internship program advisor.

334 Carson Engineering Center, 202 W. Boyd St., Norman, Oklahoma 73019-1024
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2. Proposal – The student must complete a proposal prior to starting the internship, but after consultation with the CEES internship program advisor and the potential employer. The proposal should identify the potential employer, the direct supervisor, and the duration of internship. The proposal should be submitted to the CEES internship program advisor, with a copy to the CEES director.

The proposal must include the following sections: Introduction, Objectives, Internship Plan, and Schedule. The Introduction section should state the relevance of and need for the proposed internship work from the perspective of the student's major field of study. The Objectives section should state the technical project objectives, as well as the student's individual learning objectives. The Internship Plan section should provide a discussion of the specific project(s) that the student will work on and identify the student's responsibilities for each project. The Schedule section should outline the timetable for completion of all internship projects. The proposal should be at least 1-3 pages long, typewritten using 12 point, Times New Roman font, and double-spaced with 1" margins.

Important Note:

The proposal must be submitted at least 30-days prior to the start of the internship, and it must be evaluated and approved by the CEES internship program advisor prior to the start of the internship. Following completion of the internship, if the actual work conducted differs significantly from the contents of the proposal, a revised proposal must be approved by the advisor before the student enrolls in the class.

3. Internship – Students must complete 400 hours of internship, with satisfactory progress reports. This could be completed by working full-time over one summer semester or by working part-time over several regular semesters.
4. Course – After completing their internship, the student should enroll in CEES 4423, which will meet weekly and include activities that will enhance the lessons learned during the internship program. It will also provide guidance on the reporting requirements and provide a forum for the oral presentations.

As a part of the course requirements, the student must complete a written and oral report, as described below.

Written Report: this report will typically be at least 25 pages long (not including the title page, executive summary, references, or appendices), and must be typewritten using 12-point, Times New Roman font, and double-spaced with 1" margins. The typewritten report should contain all the sections required for the proposal (i.e., Introduction, Objectives, Internship Plan, and Schedule), updated and expanded as appropriate. The report should provide detailed descriptions of all projects conducted and the student's

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role. The report should also include sections titled “Results” and “Self Assessment”. The Results section should describe the student’s responsibilities during the internship and the scope of work completed. The Self Assessment section should include the student’s assessment of his/her internship accomplishments. The Self Assessment section should include answers to at least the following questions: Did you feel prepared for this internship? How did your “real-world” experience compare to your classroom experience? In what area did you feel most deficient? What did you (or could you) do to address this deficiency? In what area did you feel most confident and why? How did your “people skills” change because of your internship? Would you describe your employer's work environment as nurturing, rigid, creative, or other? Do you feel that you learn more in a 3-credit class or a 3-credit internship?

The final written report must be submitted and presented as part of the CEES 4423 class requirements. The student must submit a draft report to the CEES internship program advisor 4 weeks before it is due to allow for advisor review and student revisions.

Oral Presentation: The student should make a modern, computer-based, 20–25-minute oral presentation that highlights the same topics as the written report, as scheduled during the CEES 4423 class. The student should also be prepared for a 15–20-minute question and answer period following the presentation.

Assessment: This course is graded on a Satisfactory/Unsatisfactory (S/U) basis. To earn a grade of “S”, all the criteria in the following table must be met satisfactorily.

Assessment items	Criteria
1. Proposal	Proposal is grammatically correct, includes all required sections, and clearly identifies internship work tasks and relevance to CEES curriculum.
2. Supervisor’s Report	Lists dates worked, describes project(s) and student’s responsibilities, and evaluates student’s performance.
3. Technical Performance	Project(s) is/are completed as assigned using good science and engineering principles.
3. Written Report	Report is well organized, clearly written, contains no typographical or grammatical errors, and includes all required sections. Report describes relationship of work to CEES curriculum. Report is submitted on time.
4. Oral Presentation	Presentation is delivered in a professional manner (i.e., well-practiced and with a minimum of technical difficulties) and student can respond effectively to questions.
5. Class Activities	Satisfactory participation in designative activities.

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4.0 PREMEDICAL OPTION

Students who wish to fulfill medical school admission requirements must consult with the Premedical Professions Advising Office (www.ou.edu/advising/about_advising/pre-professionaladvising) at the beginning of their degree programs. This office can provide students with current information about medical school admission requirements and assist in identifying the appropriate program of study.

Careful consultation with the Premedical Professions Advising Office early in the curriculum is required so that the student can choose appropriate general education, elective, and other courses that will allow the student to complete both the premedical and CEES degree requirements as efficiently as possible. Students who wish to complete a BS degree in Architectural, Civil, or Environmental Engineering and fulfill medical school admission requirements may, with their CEES advisor's approval, they should choose one professional elective from among the upper division life science and related courses that will fulfill medical college admission requirements. Students seeking to complete medical school admissions will require coursework beyond the credit hours normally required for the BS degree in CEES.

5.0 REQUIRED SOCIAL SCIENCE AND HUMANITIES COURSES

Engineers must understand their social responsibilities and be able to consider related factors in making professional decisions. Therefore, studies in the humanities and social sciences should meet both the objectives of a broad education and those of the engineering profession. The humanities consist of those areas concerned with man and his culture (e.g., history, literature, philosophy, and religion); whereas the social sciences are the studies of individual relationships in and to society (e.g., anthropology, economics, psychology, geography, political science, and sociology).

ABET requires that courses taken in humanities and social sciences provide students both a breadth and depth of knowledge and should not be a selection of unrelated introductory courses. The Gallogly College of Engineering requires that a minimum of one of these must be upper division and at least two should be in the same or closely related areas.

In addition to ABET criteria, OU General Education Requirements (Table 4) mandate that students take two courses (6 credits) in social science and four courses (12 credits) in humanities. The humanities requirement consists of one course (3 credits) in understanding artistic forms; two courses (6 credits) in western culture; and one course (3 credits) in world culture. Furthermore, according to State Regents' ruling, one of the social science courses must be P SC 1113 (American Federal Government) and the western culture courses must include either History 1483 (United States to 1865) or History 1493 (United States, 1865 to the Present). At least one of the courses (minimum of 3 hours) used to satisfy the general education requirements must be at the upper division level.

Students may wish to explore other courses in the humanities (Table 5) and social sciences (Table 6), but it is imperative that students are aware of the requirements and meet them as early as possible. Please consult with the WSSC to make certain the courses satisfy both ABET and OU General Education Requirements. Only one humanity and one social science course can be used in the curriculum.

Table 4. Examples of Courses to Meet the OU General Education Requirements

SOCIAL SCIENCE	P SC 1113	American Federal Government, and
	GEOG 3443	Environment and Society
ARTISTIC FORMS	A HI 1113	The Understanding of Art, or
	ARCH 3013	Architecture for Non-Majors
	ENGL 2413	Introduction to Literature
WESTERN CULTURE	HIST 1483	United States, to 1865, or
	HIST 1493	United States, 1865 to the Present, and
	HIST 3483	Gilded Age and Progressive Era, 1877-1917.
WORLD CULTURE	ANTH 2203	Global Cultural Diversity, or
	ARCH 2243	History of the Built Environment I, or
	HSTM 3453	Science and Civilization in Islam

Table 5. Examples of Western Culture Courses for Engineers

PHIL 1013	Introduction to Philosophy
PHIL 1213	Introduction to Ethics
PHIL 3253	History of Ethics
PHIL 3313	History of Ancient Philosophy
PHIL 3333	History of Modern Philosophy
PHIL 3353	American Philosophy
SOC 1523	Social Problems

Table 6. Examples of Social Science Courses for Engineers

ENST	Human Evolution
ECON 1113	Principles of Economics—Macro
ECON 1123	Principles of Economics—Micro
SOC 3613	Global Social Problems
PSY 1113	Elements of Psychology

5.1 Foreign Language Requirements

To satisfy the OU General Education Requirements, non-international students must successfully complete two years of the same foreign language in high school or a two-semester sequence of a single language such as: Chinese, French, German, Greek, Hebrew, Italian, Japanese, Latin, Russian, Spanish, Arabic and American Indian languages in college.

An international student who graduates from a secondary school in which the language of instruction was not English has to satisfy the language requirement through passing the TOEFL exam for admission to OU. An international student who graduates from a secondary school in which the language of instruction was English must meet the foreign language requirement of non-international students. Transcripts documenting foreign language study, or an advanced standing exam must be presented for completion of the general education foreign language requirement.

In addition, students who complete an Associate of Arts or Associate of Sciences degree in the Oklahoma state system are considered to have completed all lower division general education requirements, including foreign language (even though they may never have taken any foreign language).

6.0 SCHOLARSHIPS AND FINANCIAL AID

Several scholarship opportunities are available to CEES undergraduate students including entering freshmen. Scholarships typically are awarded both for potential academic ability and financial need. Scholarships are awarded by the school, alumni, consulting firms and private industry. Awards range from \$500-\$1500. Scholarship recipients should be aware of the CEES Policy on Scholarship Recipient Obligations. This policy requires written acknowledgement to the scholarship sponsor, and participation in the annual scholarship luncheon as well as professional activities. Scholarship students must obtain and familiarize themselves with the policy.

The deadline to apply to be considered for *general freshman scholarships* is December 15 and the deadline to apply for *transfer scholarships* is March 1 for fall/summer or November 1 for spring. Scholarship applications for incoming freshmen and transfer students can be found at www.ou.edu/admissions/affordability/scholarships

Current student applications are due February 1 and can be found at www.ou.edu/sfc/cash
In addition to the scholarships offered by CEES and the Gallogly College of Engineering, students may qualify for other scholarships or forms of financial assistance, including tuition waivers, direct student loans, work-study, and coop programs with Oklahoma firms and government agencies. The Student Financial Center, sfc@ou.edu, can provide information on the national Direct Student Loan Program, the Guaranteed Loan Program, the University Work-Study Program, and additional programs and opportunities. All students can obtain assistance in finding part-time jobs on the campus by applying at jobs.ou.edu

7.0 FUNDAMENTALS OF ENGINEERING EXAMINATION

To obtain legal status as a professional engineer students must graduate from an accredited engineering program, obtain appropriate engineering work experience, and pass two standard examinations. These examinations are administered by the National Council of Examiners for Engineering and Surveying (NCEES). The Fundamentals of Engineering (FE) and the Principles and Practice of Engineering (PE) examinations are the primary licensure examinations for engineers. The eight-hour FE examination is an open book and tests basic science, mathematics, engineering science and engineering economics. Students are eligible to take the exam when they have completed 90 hours toward an engineering degree; however, it is recommended that students take the exam during the semester they plan to graduate. *All CEES engineering students must attempt the FE examination before receiving their baccalaureate degree.* Visit with the Intro to Capstone instructors for additional information about to how and when to take the exam.

8.0 STUDENT ACTIVITIES

Student groups provide an excellent opportunity to supplement classroom education through contact with faculty, practicing environmental scientists, and fellow students. CEES students may participate in OU-registered student organizations including the Architectural Engineering Institute, the American Society of Civil Engineers, Chi Epsilon, Environmental Science Student Association, Engineers' Club, the National Society of Black Engineers, the Society of Women Engineers, and Sooners Without Borders.

Information about all registered student organizations at the University of Oklahoma can be found at OU Engage (<https://ou.campuslabs.com/engage/organizations>).

9.0 CURRICULA

Checksheets are provided at <https://www.ou.edu/checksheets> to help in planning coursework and are not intended to be exhaustive. This information presupposes that students are enrolled in a current curriculum. If necessary, please see the CEES office to receive updates to this curriculum.

The University of Oklahoma, in compliance with all applicable federal and state laws and regulations, does not discriminate on the basis of race, color, national origin, sex, sexual orientation, genetic information, gender identity, gender expression, age, religion, disability, political beliefs, or status as a veteran in any of its policies, practices, or procedures. This includes, but is not limited to; admissions, employment, financial aid, housing, services in educational programs or activities, or health care services that the University operates or provides.

For questions regarding discrimination, sexual assault, sexual misconduct, or sexual harassment, please contact the Institutional Equity Office as may be applicable – Norman Main Campus at (405) 325-3546, Norman South Research Campus at (405) 325-2215, Health Sciences Center Campus at (405) 271-2110, or Tulsa Campus at (918) 660-3107. Please see www.ou.edu/eoo. Accommodation is available by contacting (405) 325-5913.